OFFICE OF ADVOCACY

# AI IN BUSINESS

## Small Firms Closing In

**DATA NOTE:** The data for this spotlight comes from the Census Bureau's Business Trends and Outlook Survey (BTOS) covering September 2023 to August 2025. The BTOS is a new Census product which attempts to provide timely information on the economy by surveying 200,000 businesses every two weeks and asks businesses if they currently use or plan to use AI in the future in the core data. From December 2023 through February 2024, businesses surveyed in the BTOS were asked additional questions about their current and planned future use of Artificial Intelligence (AI) in supplemental data. The BTOS disaggregates the data in several ways including by firm size. When aggregating firm size bins, the BTOS number of responses by employment size are used.

RESEARCH Spotlight

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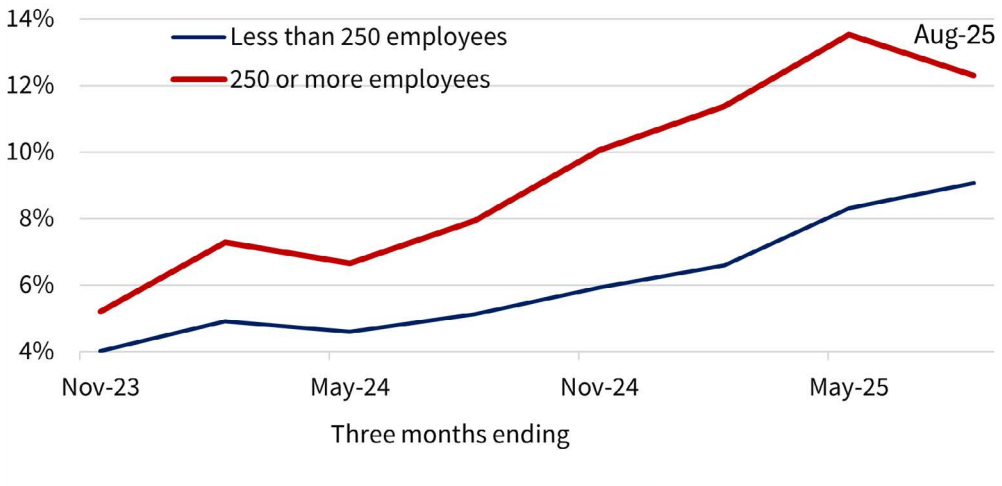
Since the public release of ChatGPT by OpenAI in late November 2022, the adoption of artificial intelligence (AI) has increased at an unprecedented rate. In August of 2024, 39 percent of U.S. adults reported using AI, more than double the early adoption rates of personal computers and the internet.[1] To meet this demand businesses have invested billions of dollars[2] and governments have rushed to regulate the new technology.[3] AI is often thought to be of interest only to the largest of technology companies. However, if it is to be as transformative as some expect, all businesses will have to incorporate it as they have with personal computers and the internet.

Small businesses are already contributing to AI development, as many of the firms developing AI tools are startups, rather than entrenched businesses.[4] Large businesses outpaced small ones in AI adoption, although the gap has shrunk recently (Figure 1). The digital divide between large and small business use was large and prolonged during previous technological transformations, such as internet access. The purpose of this spotlight is to measure and interpret the divide in AI adoption by size of business using the Census Bureau's new Business Trends and Outlook Survey (BTOS).

**Figure 1. AI Use by Firm Size**




Source: BTOS, author's calculation. Each data point represents, among BTOS responses during the three-month window, the percentage of businesses reporting that they use AI to produce goods or services. Data are representative of all businesses.

In late 2023 and early 2024, the Census Bureau asked businesses in-depth questions about their AI usage. Results revealed a moderate divide that was forming between small businesses (with less than 250 employees) and large businesses (more than 250 employees) in terms of how they are adopting AI. The large-small firm gap is substantially less in the most recent data. However, when looking six months ahead, more large firms anticipate AI use.

# Closing the Gap

Six months ago, 6.3 percent of small businesses (less than 250 employees) were using AI compared with 11.1 percent of large businesses (Figure 1), a factor of 1.8. Now, the small business percentage is up to 8.8. Overall, the adoption trajectories shown in Figure 1 suggest that small businesses may only be a year behind large businesses.

The slowed pace of large business adoption may suggest that small businesses could catch up sooner, although a greater percentage of large businesses anticipate adopting AI during the next six months (Figure 2). Interestingly, businesses with less than five employees use AI more than other small businesses, leading to a U-shaped relationship between business size and AI use.

[1] Bick, Alexander, Adam Blandin, and David Deming. 2024. "The Rapid Adoption of Generative AI." SSRN Electronic Journal. https://doi.org/10.2139/ssrn.4964384.

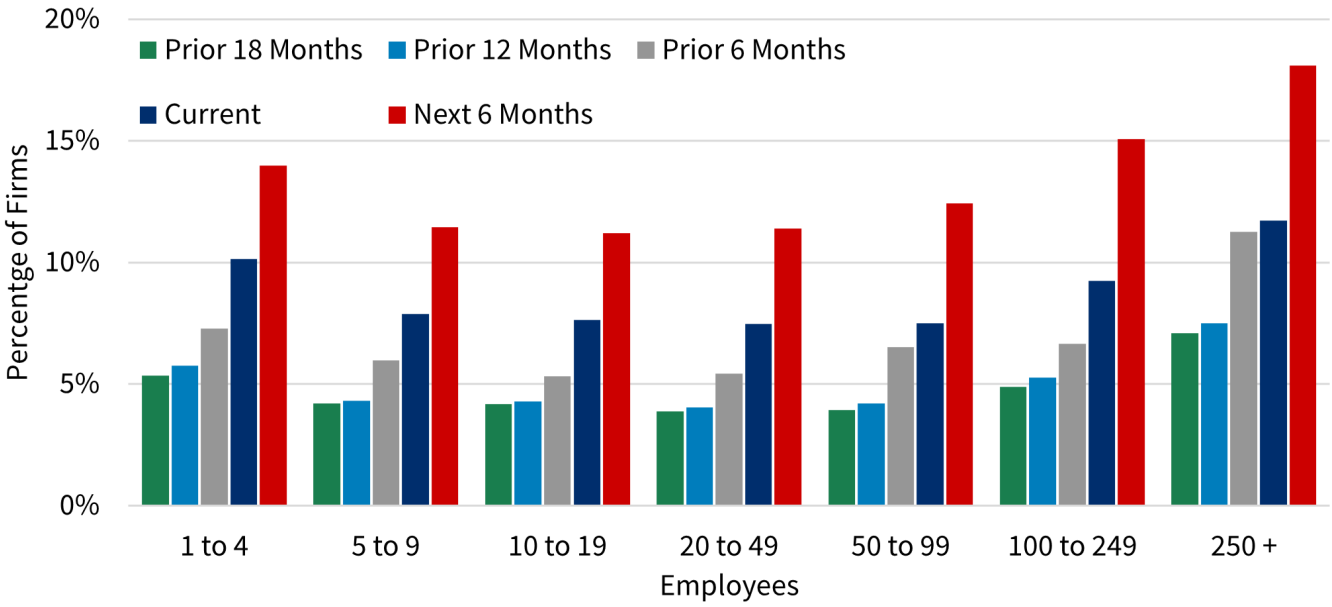
[2] CB Insights. 2024. *State of AI 2023 Report*. CB Insights Research. CB Insights. February 2024.

[3] Executive Order on the Development and Use of AI - October 2023 since superseded by Executive Order on Removing Barriers to American Leadership in Artificial Intelligence – January 2025, FCC Makes AI-Generated Voices in Robocalls Illegal - February 2024, European Union AI Act Enters into Force - August 2024.

[4] Cai, Kenrick. 2024. "The AI 50 2023." Forbes. April 11, 2024. https://www.forbes.com/lists/ai50/

Also note from Figure 1 that part of the closing of the gap is from a reduction in the large-firm usage rate, while the small-firm adoption pace continues. The three-month change may not be due to sample changes because, over the six-month time frame, the repeated cross-sections in Figure 1 show a similar large-firm change as the retrospective data shown in Figure 2. More research is needed on how many large firms discontinued AI use over the past three months versus the May 2025 data point being an outlier.[5]

**Figure 2. Businesses Using AI**




Source: BTOS, author's calculation. Current and expected usage in 6 months gathered from June 16 to September 7, 2025. Prior 6 months usage gathered from December 16, 2024 to March 9, 2025. Prior 12 months usage gathered from June 17 to September 8, 2024. Prior 18 months usage gathered from December 18, 2023 to March 10, 2024. Data representative of all businesses.

Regardless, the AI gaps are far less than they were with broadband internet. When broadband was nearly universal among large enterprises in 2004, only 48 percent of small businesses in a national survey conducted by Advocacy reported high-speed broadband access. Twenty-seven percent of small businesses did not subscribe to any internet service at all.[6]

## Small Businesses Lead in Several Use Cases

Small and large businesses using AI are similar in terms of the number of AI use cases, with small firms only slightly behind. The BTOS 2024 supplemental AI survey listed 18 use cases for AI and asked businesses to pick all of the applications of AI that they use (Figure 3).[7] Among small businesses using AI, the average number of use cases was 2.0, compared to 2.1 for large firms.

Of the 17 use cases shown in Figure 3, small businesses lead in almost half. Marketing automations are especially common among small businesses. The use cases where small businesses lag the furthest behind are robotic process automations (16.7 percent difference with large businesses), data analytics (9.9 percent), and chat bots (7.0 percent).

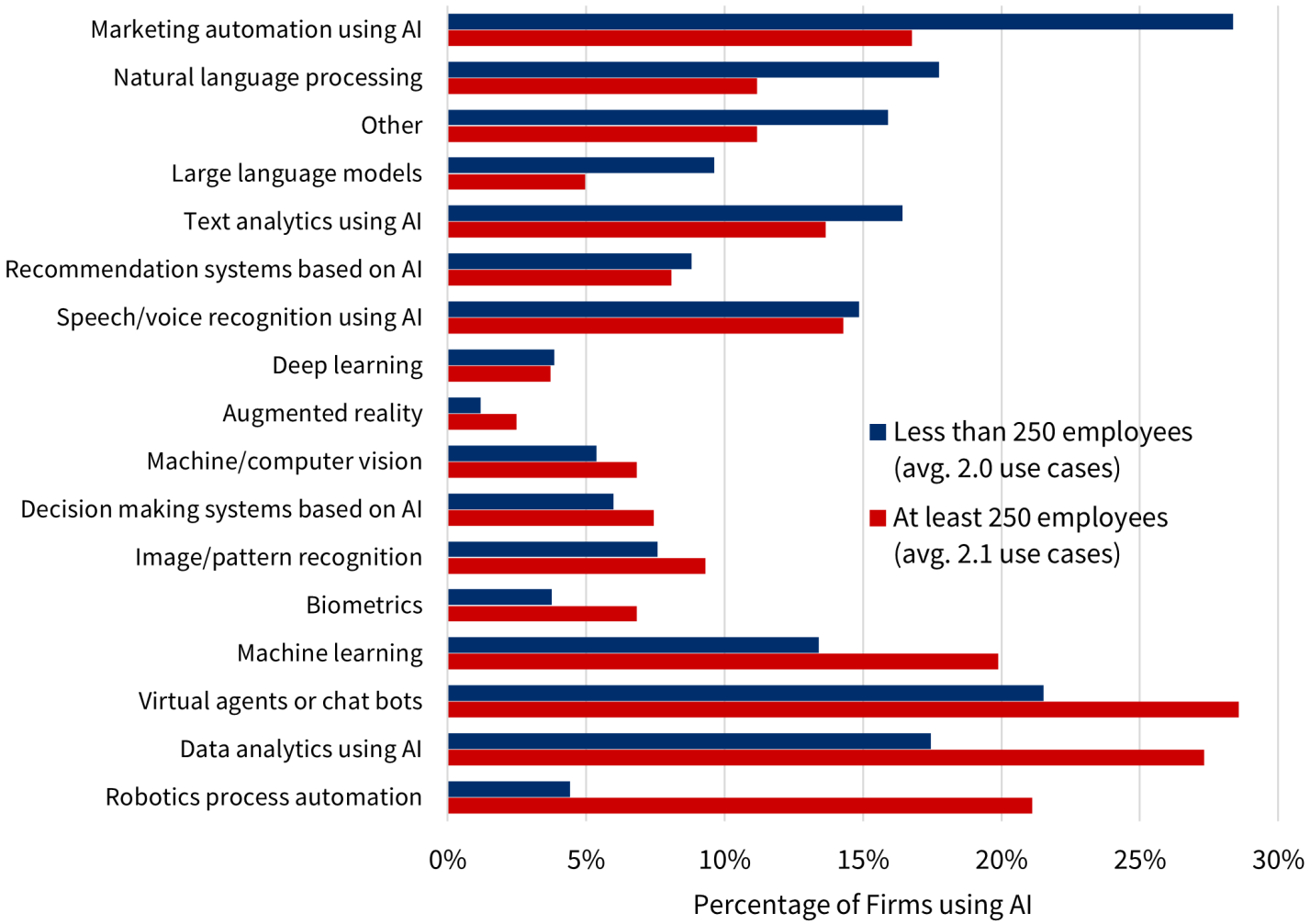
Small businesses are somewhat behind in investing in AI (Figure 4). About 50 percent of small firms using AI in some way reported no investments into its usage, whether that be in the form of employee training,

[5] According to the binomial formula, the t-statistic for the hypothesis of no change between May and August 2025 in the large-employer AI usage rate is -1.5.

[6] Posiask, S. B. 2004. *A Survey of Small Businesses' Telecommunications Use and Spending*. Washington, DC: Small Business Administration, Office of Advocacy.

[7] The use cases are sorted according to the small-large firm gap. One use case is excluded, Neural Networks, which had just 0.2% of all firms reported using AI for Neural Networks, and businesses with more than 250 employees had their numbers suppressed due to low data availability.

**Figure 3. Current AI Use Cases**




Source: BTOS AI Supplement, author's calculation. Data representative of businesses which were currently using AI between December 4, 2023 and February 25, 2024. Firm size bins less than 250 employees were aggregated using BTOS response numbers for weighting.

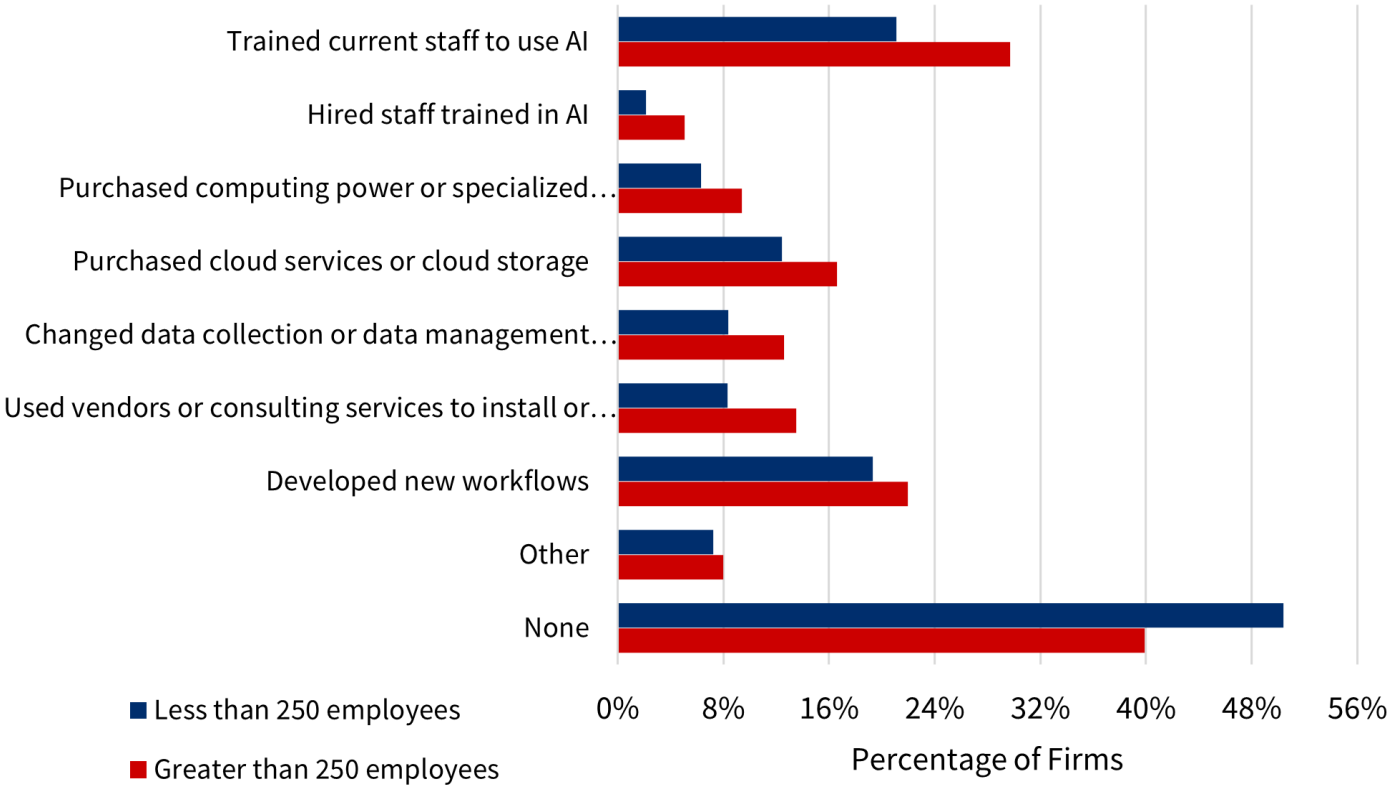
physical capital, or intangible processes. In comparison, just 40 percent of large businesses reported making no investments. The areas where small businesses lag the furthest behind in AI investments are training staff (8.6 percent difference with large businesses), hiring vendors or consultants to integrate AI (5.2 percent), and changing data collection and management practices (4.2 percent).

## Many Small Businesses Believe AI is Not Applicable to Their Business

While there are numerous barriers to a business adopting AI— including high costs, security concerns, and an uncertain regulatory environment— the primary barrier for small businesses is the belief that AI is not applicable to their business.

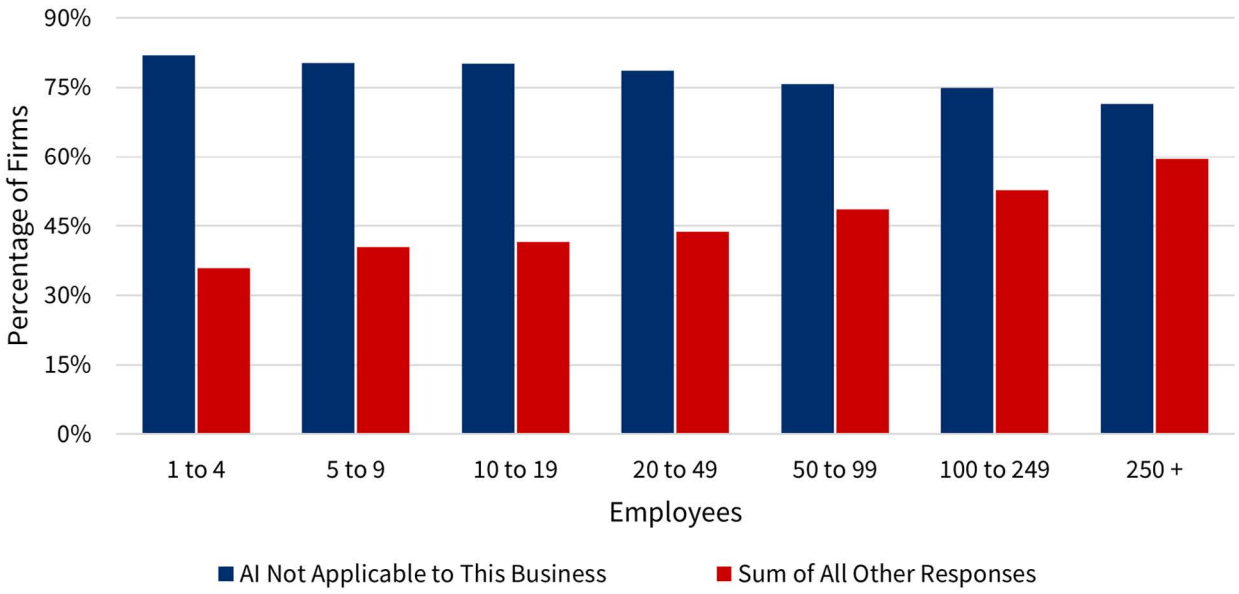
As shown in Figure 5, nearly 82 percent of businesses under five employees reported relevance as a reason they were not planning to use AI in the near future. In comparison, the next most reported concerns were lack of knowledge about AI and privacy concerns which were reported by 6.7 percent and 6.3 percent of businesses under five employees. As businesses become larger, the likelihood they reported that AI is not applicable to their business falls while more complex concerns rise, such as the ones mentioned previously. There could be multiple explanations for these responses. First, AI companies may focus on designing their products for larger businesses, leading small businesses to feel AI is not relevant to them. Alternatively, small businesses may be more concerned about day-to-day operations and thus have less time to learn about emerging technologies. In either case, AI companies may have to put in more effort to reach the underserved small business market.

**Figure 4. Investments Made for AI Among Firms Using AI**




Source: BTOS AI Supplement, author's calculation. Data representative of businesses which were currently using AI between December 4, 2023 and February 25, 2024. Firm size bins less than 250 employees were aggregated using BTOS response numbers for weighting. Businesses could choose multiple responses.

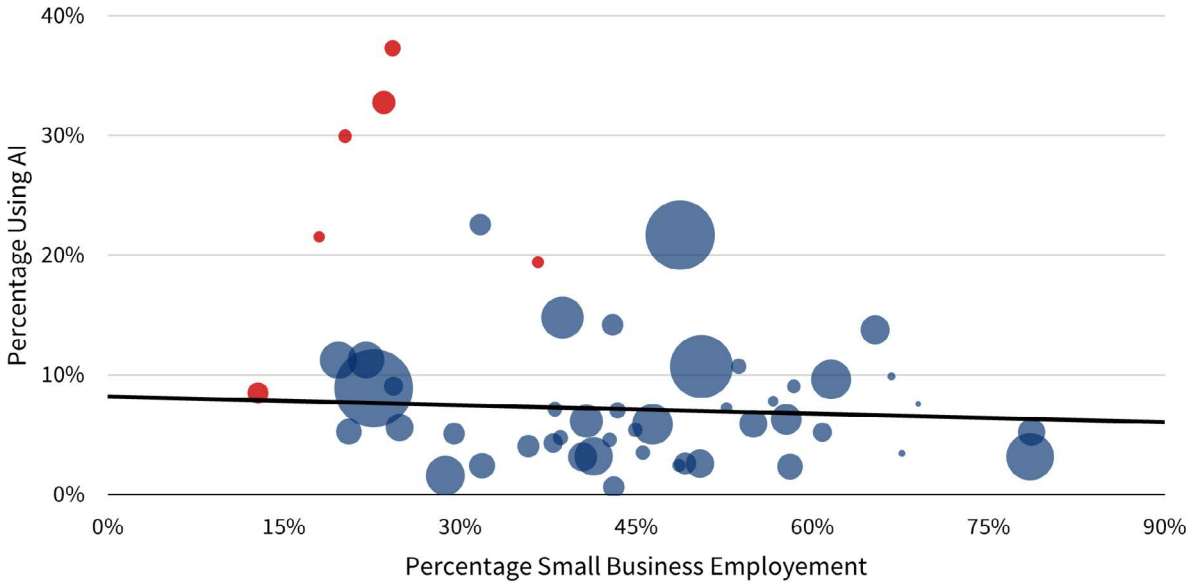
**Figure 5. Reasons Not to Use AI**




Source: BTOS AI Supplement, author's calculation. Data representative of businesses which were not planning to use AI in the next six months between December 4, 2023 and February 25, 2024. Ten categories are combined in the sum of all other responses. Businesses could choose multiple responses.

# Industry Level Exploration

**Figure 6. Current Use of AI by NAICS 3-digit Industry**




Source: BTOS, SUSB  author's calculation. Red dots are industries within the Information Sector. All other industries are colored blue. The size of dots represents total industry employment. The trend line excludes firms in the information sector. Current usage data was gathered from June 16 to September 7, 2025. The percentage of small business employment calculated using SUSB 2021 and represents the percentage of employment at firms with less than 250 employees. Data representative of all businesses in an industry.

One hypothesis to explain the pace of AI adoption among small businesses is that they might be concentrated in industries where AI is less impactful.

While some industries have low small business employment and high AI usage (Figure 6), these are all concentrated in the Information sector (the red dots). This sector's heavy usage of AI is likely because the technology originated there and is most suitable to businesses in the sector. For all other industries, there does not appear to be a relationship between AI usage and the percentage of employment at small businesses. As such, it seems unlikely that industry is the primary driver of the AI gap between small and large businesses.[8]

# AI and Small Business Demand for Labor

Proponents of AI expect increased productivity for workers,[9] while opponents are concerned about unintended consequences.[10] The plot of John Steinbeck's *Grapes of Wrath* features human labor (farm workers) painfully displaced by new machines (farm tractors) that increased industry productivity and output. If AI proves to drive productivity growth, there is the potential for Steinbeck's plot to play out again.

However, rules of labor demand in economics known as the Hicks-Marshall Laws of Derived Demand[11] suggest that agricultural productivity growth is a special case in which industry demand is price inelastic. Because consumers could not and would not eat all of the food that the farm workers could produce with the new equipment, farm employment had to fall. The Hicks-Marshall Laws predict that a price elastic sector increases its

[8] Using weighted least squares, the fraction of workers in an industry employed at businesses with less than 250 employees explains just 1.6 percent of the variation in industry current AI usage outside of the information sector. Results are similar with expected AI in usage in 6 months. Including industries in the information sector does lead to statistically significant results at the 10 percent level.

[9] Frey, Carl-Benedikt, Era Dabla-Norris, Rob Hornby, and Laura D'Andrea Tyson. 2024. *Will AI Make It Easier to Get Productivity Growth We Want?* World Economic Forum. October 15, 2024. https://www.weforum.org/stories/2024/10/ai-artificial-intelligencemake-productivity-growth/.

[10] Chakravorti, Bhaskar. 2024. *AI's Trust Problem*. Harvard Business Review. May 3, 2024. https://hbr.org/2024/05/ais-trust-problem.

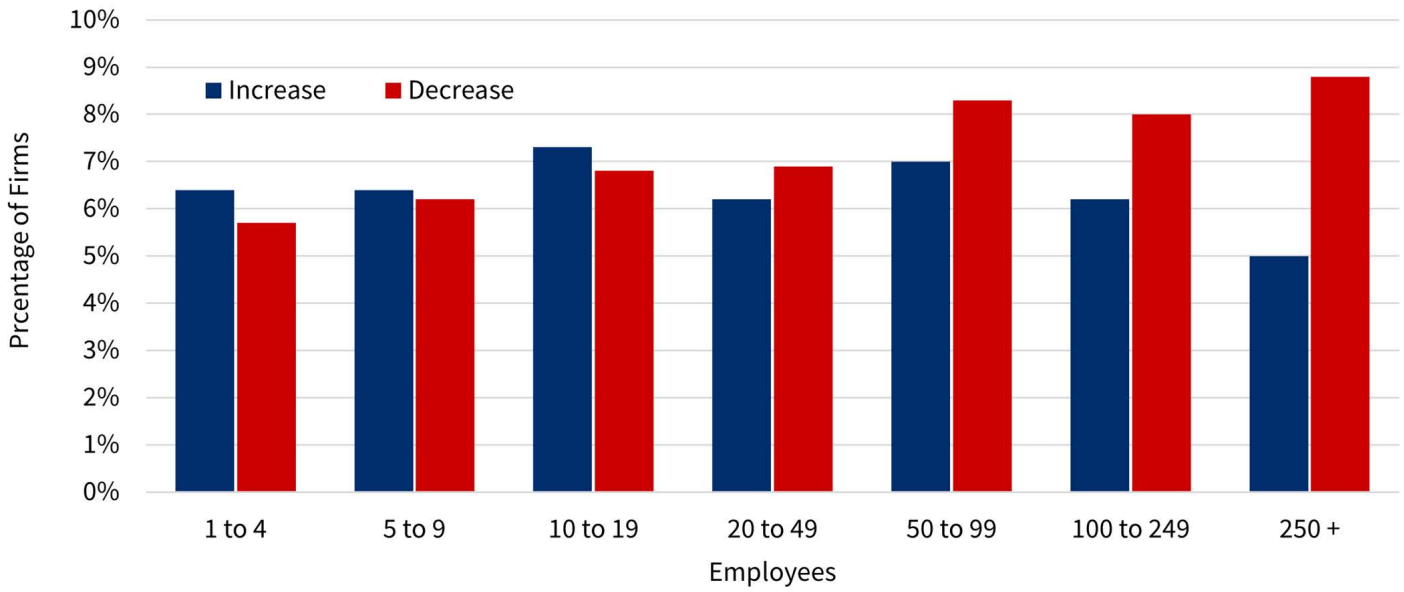
[11] The Hicks-Marshall Laws of Derived demand were formulated by Marshall (1895, *Principles of Economics*. London: MacMillan and Co) and Hicks (1936, The Theory of Wages. London: Macmillan).

demand for labor in response to productivity growth.[12]

The BTOS survey results accord with the Hicks-Marshall Laws. By virtue of its size relative to the industry, a typical small business has demand for its produce that is highly price elastic. That is, relative to its size, it has many potential consumers to attract by cutting prices or increasing product quality. As such, a small business experiencing productivity growth is more likely to increase its production enough to require more employees rather than fewer. A large business would not react as much due to being less price elastic demand for its produce.

Figure 7 shows expectations for employment to change due to AI usage for employers of various sizes. Small employers are most likely to expect AI usage to increase their employment needs, and least likely to expect AI usage to decrease their employment.

**Figure 7. Expected Employment Changes due to AI**




Source: BTOS AI Supplement, author's calculation. Data representative of businesses which were currently using AI between December 4, 2023 and February 25, 2024. Data representative of businesses which expect to use AI in the next 6 months.

If the Hicks-Marshall Laws are correct, small businesses that fail to adopt productivity-enhancing technology will substantially lose market share to competitors that do adopt.[13] Some small businesses may need help learning about its capabilities and integrating it, while also managing their day-to-day operations.

The federal government has several resources for learning more about AI, including from the Small Business Administration[14] and the National Institute of Standards and Technology (NIST).[15] NIST recently released a framework which small businesses can use to assess the risk of AI.[16] While these resources offer a starting point for small businesses, they are not comprehensive of all small business concerns highlighted by the BTOS data or centralized and accessible for all small businesses.

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[12] Council of Economic Advisors. *Economic Report of the President*. Chapter 7. 2019. https://www.govinfo.gov/content/pkg/ERP-2019/pdf/ERP-2019.pdf.
As an example of a price-elastic industry, the chapter points to the "recent history of taxi dispatchers, who take calls from individuals desiring a ride and direct a driver to the pickup point. … companies discovered how to use a smartphone to perform the tasks of the dispatcher, and these companies famously distributed such an app to millions of smartphone users. The result was a dramatic increase in the number of people working in the transportation industry, broadly understood to include drivers for … ride-sharing platforms."

[13] The supply of capital to the economy is another crucial determinant of the wage effects of productivity growth but is beyond the scope of this spotlight. See Jaffe, Minton, Mulligan, and Murphy, *Chicago Price Theory*, Princeton University Press, 2019.

[14] U.S. Small Business Administration. 2024. *AI for Small Business*. SBA.gov. 2024. https://www.sba.gov/business-guide/manage-your-business/ai-small-business.

[15] National Institute of Standards and Technology. 2017. *Artificial Intelligence.* NIST. June 2, 2017. https://www.nist.gov/artificial-intelligence.

[16] National Institute of Standards and Technology. 2023. *AI Risk Management Framework*. NIST. July 12, 2023. https://www.nist.gov/itl/ai-risk-management-framework.

Resources could be expanded so that small businesses can more reliably learn about AI from the federal government. These resources could be also targeted to areas where small businesses lag furthest behind, serve as the starting point of employee training on AI, as well as support national AI priorities put forward in the White House's recently released AI Action Plan.[17]

Other institutions also have resources including state and local governments, universities, nonprofits, and firms developing AI tools. For example, the New York Small Business Development Center in Albany offers a specialty program on artificial intelligence to provide guidance in applying capabilities in areas such as marketing, financial management, operations, and business planning.[18]

Finally, financial resources may need to be made available to small businesses so that they can catch up in AI usages where they lag, such as data analytics. The AI action Plan acknowledges this and encourages federal agencies to leverage existing Small Business Innovation Research Programs and Small Business Technology Transfer Programs to facilitate AI adoption.

[17] *America's AI Action Plan*. 2025. whitehouse.gov. July 2025. https://www.whitehouse.gov/wp-content/uploads/2025/07/Americas-AI-Action-Plan.pdf.

[18] New York Small Business Development Centers. 2025. *Specialty Programs: Artificial Intelligence*. February 4, 2025. https://nysbdc.org/specialty-programs/artificial-intelligence/