# CHAPTER 4:
## Economy

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# Chapter 4: Economy



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**CHAPTER 4:**
Economy

# Overview

The economic implications of AI came into sharper focus in 2024, with substantive impact across many sectors. Early productivity gains from generative AI are becoming measurable in specific tasks, while questions persist about the technology's long-term impact on the broader economy. The labor market has begun to show signs of AI-driven transformation, with certain knowledge-worker roles experiencing disruption as new AI-adjacent positions emerge. Companies across sectors and geographical regions are moving beyond experimental AI adoption toward systematic integration. Investment patterns reflect a growing sophistication in the AI landscape, with funding increasingly directed toward specialized applications in enterprise automation and industry-specific solutions.

This chapter examines AI-related economic trends using data from Lightcast, LinkedIn, Quid, McKinsey and the International Federation of Robotics (IFR). It begins by analyzing AI-related occupations, covering labor demand, hiring trends, skill penetration, and talent availability. The chapter then explores corporate investment in AI, including a section focused specifically on generative AI. Finally, it assesses AI's productivity impact as well as robot installations across various sectors.

**CHAPTER 4:**
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# Chapter Highlights

**1. Global private AI investment hits record high with 26% growth.** Corporate AI investment reached $252.3 billion in 2024, with private investment climbing 44.5% and mergers and acquisitions up 12.1% from the previous year. The sector has experienced dramatic expansion over the past decade, with total investment growing more than thirteenfold since 2014.

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**2. Generative AI funding soars.** Private investment in generative AI reached $33.9 billion in 2024, up 18.7% from 2023 and over 8.5 times higher than 2022 levels. The sector now represents more than 20% of all AI-related private investment.

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**3. The U.S. widens its lead in global AI private investment.** U.S. private AI investment hit $109.1 billion in 2024, nearly 12 times higher than China's $9.3 billion and 24 times the U.K.'s $4.5 billion. The gap is even more pronounced in generative AI, where U.S. investment exceeded the combined total of China and the European Union plus the U.K. by $25.4 billion, expanding on its $21.8 billion gap in 2023.

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**4. Use of AI climbs to unprecedented levels.** In 2024, the proportion of survey respondents reporting AI use by their organizations jumped to 78% from 55% in 2023. Similarly, the number of respondents who reported using generative AI in at least one business function more than doubled—from 33% in 2023 to 71% last year.

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**5. AI is beginning to deliver financial impact across business functions, but most companies are early in their journeys.** Most companies that report financial impacts from using AI within a business function estimate the benefits as being at low levels. 49% of respondents whose organizations use AI in service operations report cost savings, followed by supply chain management (43%) and software engineering (41%), but most of them report cost savings of less than 10%. With regard to revenue, 71% of respondents using AI in marketing and sales report revenue gains, 63% in supply chain management, and 57% in service operations, but the most common level of revenue increases is less than 5%.

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**6. Use of AI shows dramatic shifts by region, with Greater China gaining ground.** While North America maintains its leadership in organizations' use of AI, Greater China demonstrated one of the most significant year-over-year growth rates, with a 27 percentage point increase in organizational AI use. Europe followed with a 23 percentage point increase, suggesting a rapidly evolving global AI landscape and intensifying international competition in AI implementation.

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# Chapter Highlights (cont'd)

**7. China's dominance in industrial robotics continues despite slight moderation.** In 2023, China installed 276,300 industrial robots, six times more than Japan and 7.3 times more than the United States. Since surpassing Japan in 2013, when it accounted for 20.8% of global installations, China's share has risen to 51.1%. While China continues to install more robots than the rest of the world combined, this margin narrowed slightly in 2023, marking a modest moderation in its dramatic expansion.

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**8. Collaborative and interactive robot installations become more common.** In 2017, collaborative robots represented a mere 2.8% of all new industrial robot installations, a figure that climbed to 10.5% by 2023. Similarly, 2023 saw a rise in service robot installations across all application categories except medical robotics. This trend indicates not just an overall increase in robot installations but also a growing emphasis on deploying robots for human-facing roles.

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**9. AI is driving significant shifts in energy sources, attracting interest in nuclear energy.** Microsoft announced a $1.6 billion deal to revive the Three Mile Island nuclear reactor to power AI, while Google and Amazon have also secured nuclear energy agreements to support AI operations.

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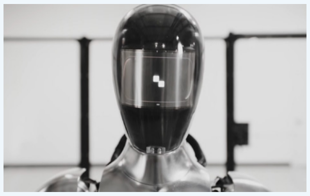
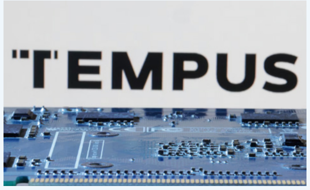
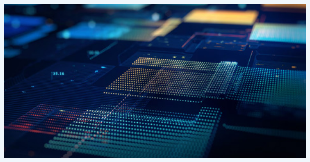
**10. AI boosts productivity and bridges skill gaps.** Last year's AI Index was among the first reports to highlight research showing AI's positive impact on productivity. This year, additional studies reinforced those findings, confirming that AI boosts productivity and, in most cases, helps narrow the gap between low- and high-skilled workers.

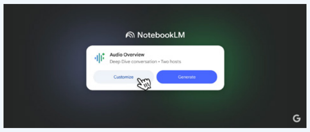
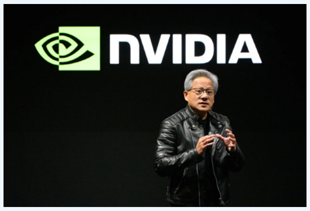
The chapter begins with an overview of some of the most significant AI-related economic events in 2024, as selected by the AI Index Steering Committee.

# 4.1 What's New in 2024: A Timeline

| Date | Event | Type | Image |
|---|---|---|---|
| Jan 16, 2024 | Synopsys acquires Ansys for $35 billion to improve silicon-to-systems design solutions. | Acquisition | <br><br>Figure 4.1.1<br>Source: Synopsys, 2024 |
| Feb 21, 2024 | Reports claim that OpenAI surpassed $2 billion in annualized revenue in December 2023. | Valuation milestone | <br>Figure 4.1.2<br>Source: Inc., 2024 |
| Feb 29, 2024 | Figure AI, a humanoid robot startup, raises $675 million at a valuation of $2.6 billion. | Investment/funding | <br>Figure 4.1.3<br>Source: SiliconAngle, 2024 |
| Mar 21, 2024 | Microsoft hires most of Inflection AI's staff, including cofounders, and pays $650 million to license Inflection's AI models. | Acquisition | <br><br>Figure 4.1.4<br>Source: Reuters, 2024 |
| May 1, 2024 | CoreWeave, an AI cloud infrastructure startup, secures a $1.1 billion funding round at a valuation of $19 billion. | Investment/funding | <br>Figure 4.1.5<br>Source: Fortune, 2024 |

| | | | |
|---|---|---|---|
| May 21, 2024 | Scale AI, a data-labeling startup, raises $1 billion and reaches a valuation of $13.8 billion. | Investment/funding | <br>Figure 4.1.6<br>Source: Reuters, 2024 |
| Jun 11, 2024 | Mistral AI, a French open-source AI model startup, raises $640 million at a valuation of $6 billion. | Investment/funding | <br>Figure 4.1.7<br>Source: TechCrunch, 2024 |
| Jun 14, 2024 | Tempus AI, a precision medicine company leveraging AI for medical data analysis, goes public, raising $410.7 million and achieving an implied valuation of over $6 billion. | Investment/funding | <br>Figure 4.1.8<br>Source: Reuters, 2024 |
| Jul 22, 2024 | Cohere, an AI startup specializing in enterprise applications, raises $500 million in funding at a valuation of $5.5 billion. | Investment/funding | <br>Figure 4.1.9<br>Source: Crunchbase, 2024 |
| Aug 2, 2024 | Google hires Character.AI's cofounders along with research team members and licenses the startup's AI technology in a deal to buy out Character.AI's shareholders for approximately $2.5 billion. | Acquisition | <br>Figure 4.1.10<br>Source: The Verge, 2024 |
| Aug 5, 2024 | Groq, an AI chip startup specializing in fast inference, raises $640 million at a valuation of $2.8 billion. | Investment/funding | <br>Figure 4.1.11<br>Source: Groq, 2024 |

| | | | |
|---|---|---|---|
| Aug 12, 2024 | AMD acquires Silo AI, Europe's largest private AI lab, for approximately $665 million. | Acquisition |  Figure 4.1.12<br>Source: AMD, 2024 |
| Sep 5, 2024 | Safe Superintelligence (SSI) secures $1 billion in funding. | Investment/funding |   Figure 4.1.13<br>Source: TechCrunch, 2024 |
| Sep 12, 2024 | Salesforce launches Agentforce, a suite of autonomous AI agents for business operations, across its platform. | Product launch/integration |   Figure 4.1.14<br>Source: Salesforce, 2024 |
| Sep 20, 2024 | Microsoft announces a $1.6 billion deal with Constellation Energy to revive the Three Mile Island nuclear reactor to power AI data centers. | Partnership |  Figure 4.1.15<br>Source: NPR, 2024 |
| Oct 2, 2024 | OpenAI raises $6.6 billion at a valuation of $157 billion. | Investment/funding |  Figure 4.1.16<br>Source: Axios, 2024 |
| Oct 14, 2024 | Google announces an agreement to purchase nuclear energy from multiple small modular reactors (SMRs) developed by Kairos Power. | Partnership |  Figure 4.1.17<br>Source: Google, 2024 |
| Oct 16, 2024 | Amazon announces a nuclear energy plan for SMR development with Energy Northwest, X-energy, and Dominion Energy. | Partnership |  Figure 4.1.18<br>Source: Amazon, 2024 |

| | | | |
|---|---|---|---|
| Oct 17, 2024 | Google’s NotebookLM sheds “experimental” label and boasts millions of users and 80,000-plus organizations. | Product launch/integration |  Figure 4.1.19 Source: Google, 2024 |
| Nov 22, 2024 | Anthropic expands its partnership with AWS with an additional \$4 billion investment from Amazon, bringing the total to \$8 billion. | Partnership | amazon \| ANTHROP\C Figure 4.1.20 Source: Anthropic, 2024 |
| Dec 17, 2024 | Databricks, an AI data analytics company, raises \$10 billion at a valuation of \$62 billion. | Investment/funding |   Figure 4.1.21 Source: TechCrunch, 2024 |
| Dec 18, 2024 | Perplexity AI, a startup focused on AI-powered search products, raises \$500 million at a valuation of \$9 billion. | Investment/funding | perplexity Figure 4.1.22 Source: AI Magazine, 2024 |
| Dec 23, 2024 | xAI announces a \$6 billion funding round, bringing the total to \$12 billion at a valuation of over \$40 billion. | Investment/funding |  Figure 4.1.23 Source: Forbes, 2024 |
| Dec 30, 2024 | Nvidia acquires Israeli startup Run:ai for \$700 million to increase its GPU optimization capability in demanding computing environments. | Acquisition |   Figure 4.1.24 Source: TechCrunch, 2024 |

# 4.2 Jobs

## AI Labor Demand

This section analyzes the demand for AI-related skills in labor markets, drawing on data from Lightcast. Since 2010, Lightcast has analyzed hundreds of millions of job postings from over 51,000 websites, identifying those that require AI skills.

### Global AI Labor Demand

Figure 4.2.1 and Figure 4.2.2 show the percentage of job postings demanding AI skills. In 2024, Singapore (3.2%), Luxembourg (2%), and Hong Kong (1.9%) led in this metric. In 2023, AI-related jobs accounted for 1.4% of all American job postings. In 2024, that number increased to 1.8%. Most countries saw an increase from 2023 to 2024 in the share of job postings requiring AI skills.

**AI job postings (% of all job postings) by select geographic areas, 2014–24 (part 1)**
Source: Lightcast, 2024 | Chart: 2025 AI Index report

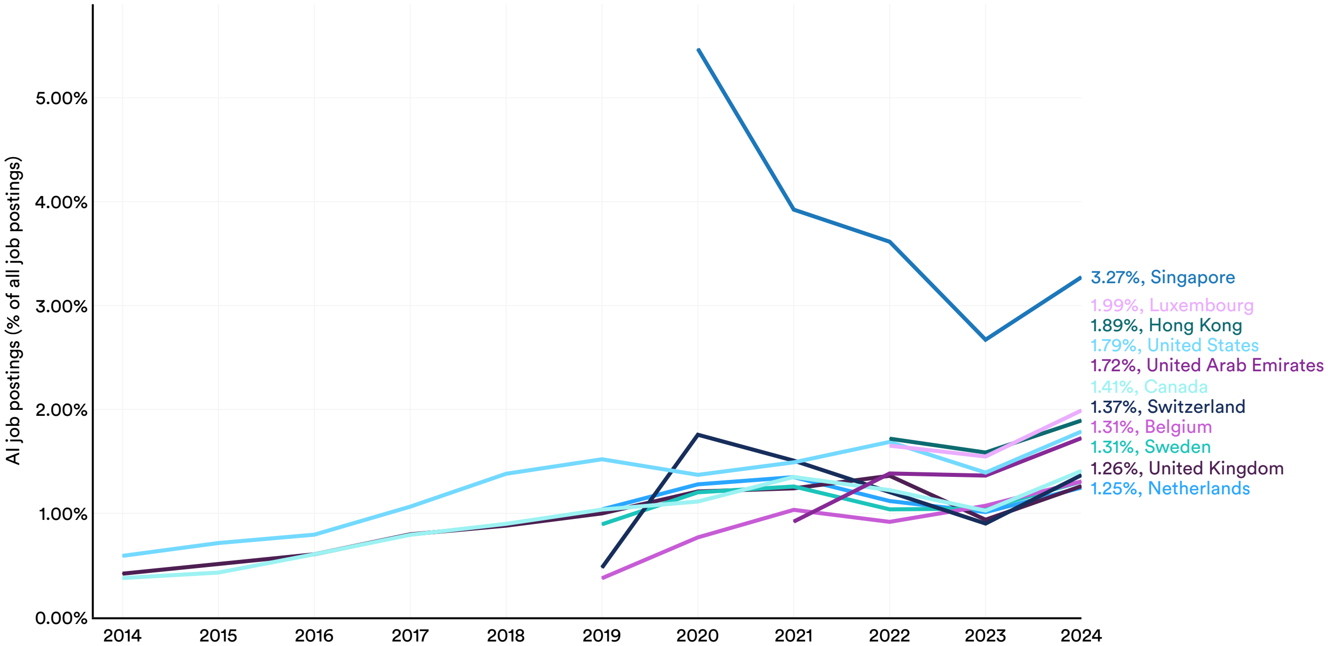



Figure 4.2.1

AI job postings (% of all job postings) by select geographic areas, 2014–24 (part 2)
Source: Lightcast, 2024 | Chart: 2025 AI Index report

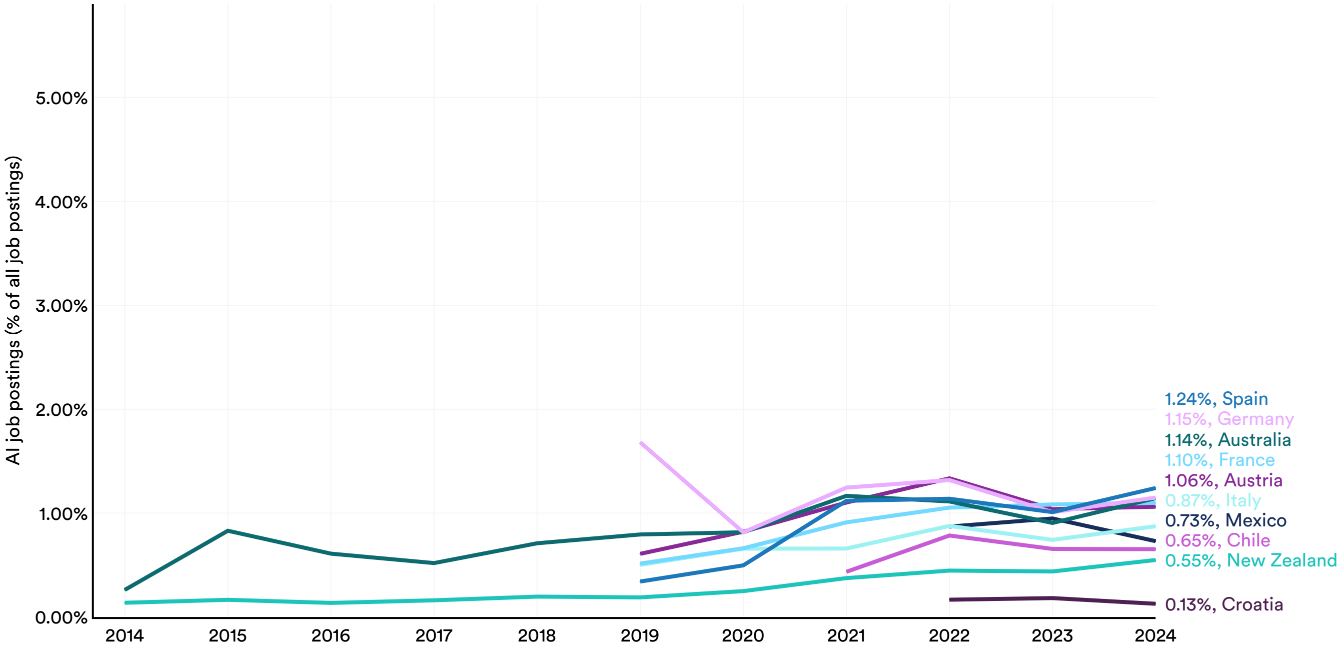



Figure 4.2.2

## US AI Labor Demand by Skill Cluster and Specialized Skill

Figure 4.2.3 highlights the most sought-after AI skills in the U.S. labor market since 2010. Leading the demand was artificial intelligence at 0.9%, followed closely by machine learning, also at 0.9%, and natural language processing at 0.2%. Since last year, most AI-related skill clusters tracked by Lightcast have had an increase in market share, with the exception of autonomous driving and robotics. Generative AI saw the largest increase, growing by nearly a factor of four.

**AI job postings (% of all job postings) in the United States by skill cluster, 2010–24**
Source: Lightcast, 2024 | Chart: 2025 AI Index report

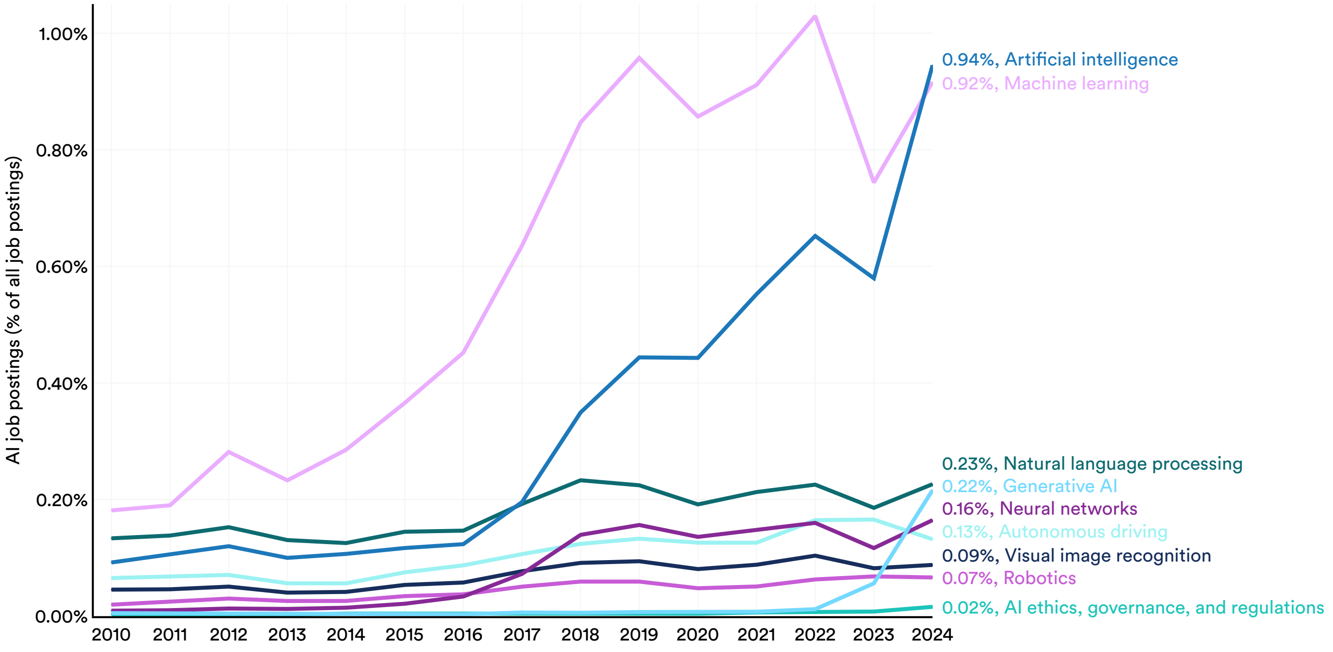



Figure 4.2.3[1]

1 A single job posting can list multiple AI skills.

Figure 4.2.4 compares the top 10 specialized skills sought in AI job postings in 2024 versus those from 2012 to 2014.[2] On an absolute scale, the demand for every specialized skill has increased over the past decade, with Python's notable increase in popularity highlighting its ascendance as a preferred AI programming language.

**Top 10 specialized skills in 2024 AI job postings in the United States, 2012–14 vs. 2024**
Source: Lightcast, 2024 | Chart: 2025 AI Index report

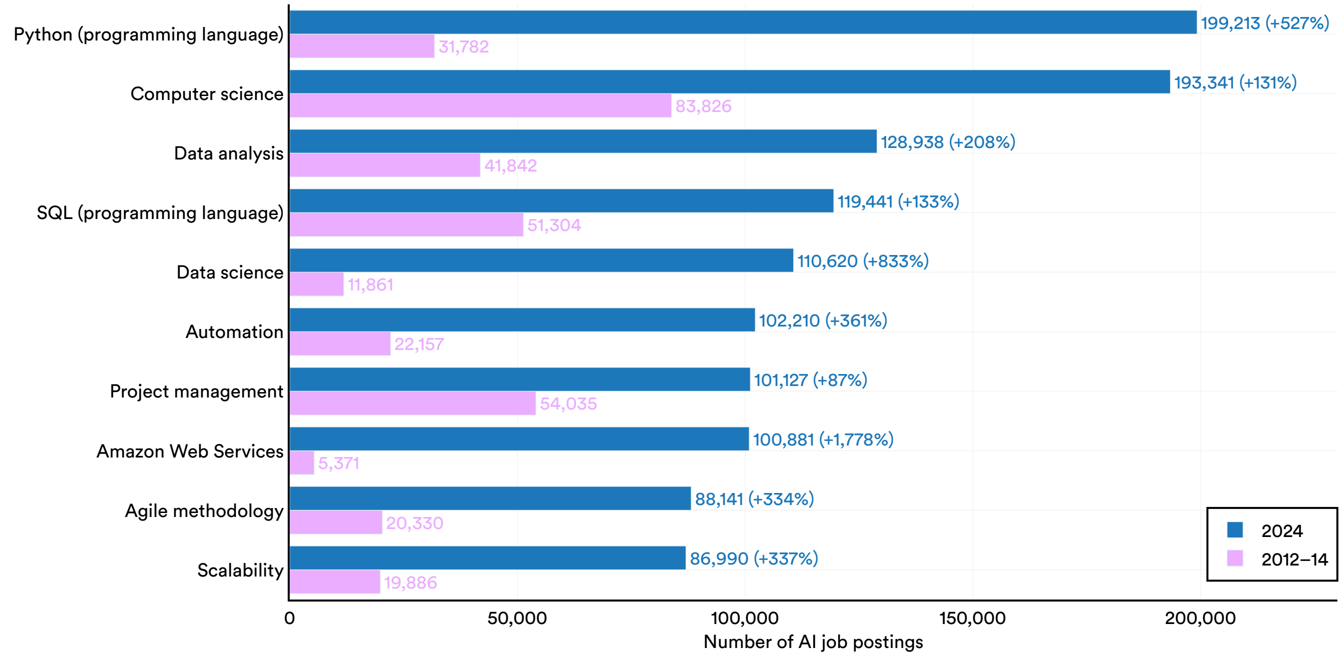



Figure 4.2.4

2 The decision to select 2012–2014 as the point of comparison was due to the scarcity of data at the jobs/skills level from earlier years. Lightcast therefore used 2012–2014 to have a larger sample size for a benchmark from 10 years ago with which to compare. Figure 4.2.4 juxtaposes the total number of job postings requiring certain skills from 2012 to 2014 with the total amount in 2024.

In 2024, year-over-year U.S. job postings citing generative AI skills increased by more than a factor of three (Figure 4.2.5). Figure 4.2.6 illustrates the proportion of AI job postings released in 2024 and 2023 that referenced particular generative AI skills.

### Generative AI skills in AI job postings in the United States, 2023 vs. 2024

Source: Lightcast, 2024 | Chart: 2025 AI Index report

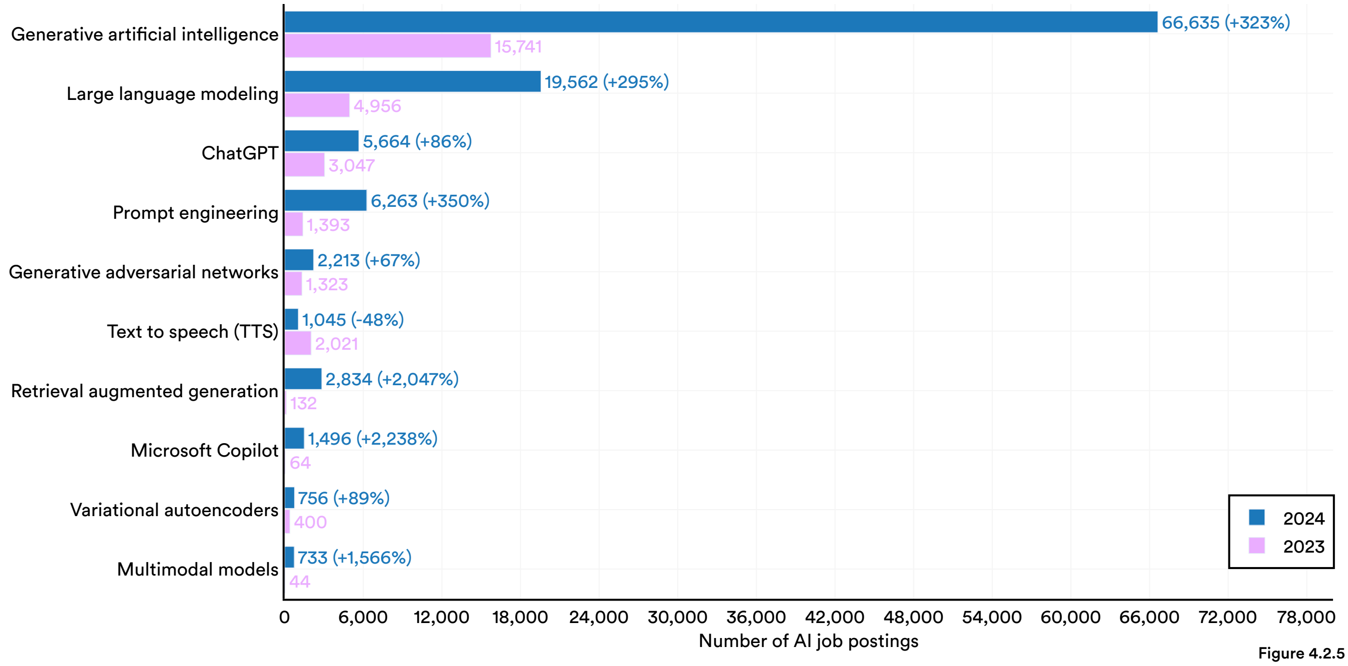



Figure 4.2.5

### Share of generative AI skills in AI job postings in the United States, 2023 vs. 2024

Source: Lightcast, 2024 | Chart: 2025 AI Index report

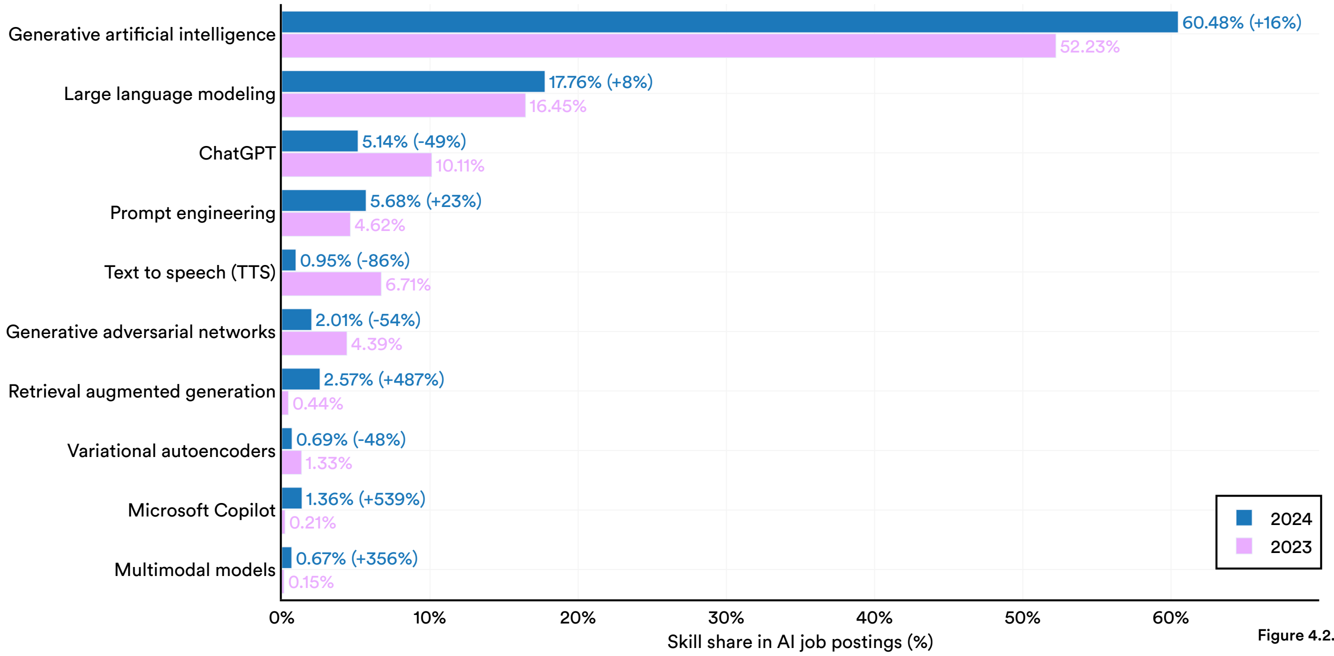



Figure 4.2.6

## US AI Labor Demand by Sector

Figure 4.2.7 shows the percentage of U.S. job postings requiring AI skills by industry sector from 2023 to 2024. Nearly every sector experienced an increase in the proportion of AI job postings in 2024 compared to 2023, except for public administration.

**AI job postings (% of all job postings) in the United States by sector, 2023 vs. 2024**

Source: Lightcast, 2024 | Chart: 2025 AI Index report

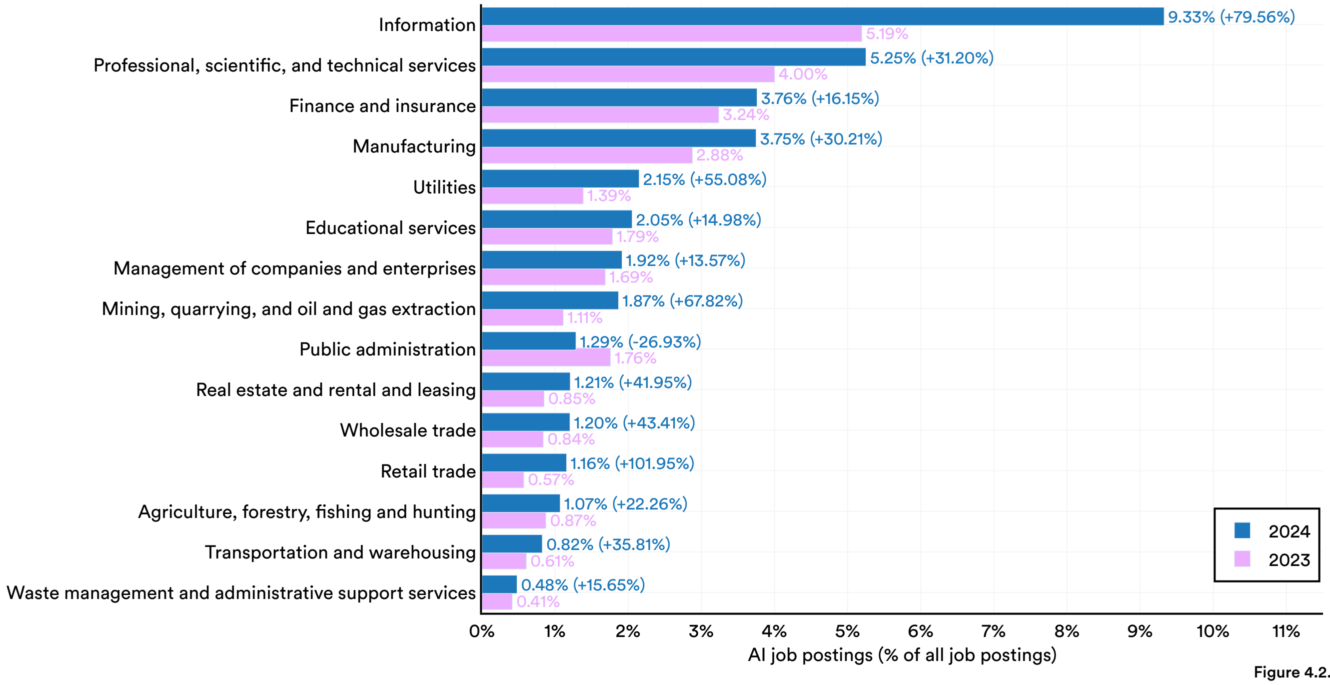



Figure 4.2.7[3]

3 The sector classifications in Figure 4.2.7 are based on two-digit NAICS codes. For more information on the Bureau of Labor Statistics' supersector and NAICS classifications, see the following reference.

## US AI Labor Demand by State

Figure 4.2.8 highlights the number of AI job postings in the United States by state. The top three states were California (103,375), Texas (57,785), and New York (37,944).

Figure 4.2.9 demonstrates what percentage of a state's total job postings were AI-related. The top states according to this metric were the District of Columbia (4.4%), followed by Delaware (3.4%) and Washington (3.3%).

### Number of AI job postings in the United States by state, 2024

Source: Lightcast, 2024 | Chart: 2025 AI Index report

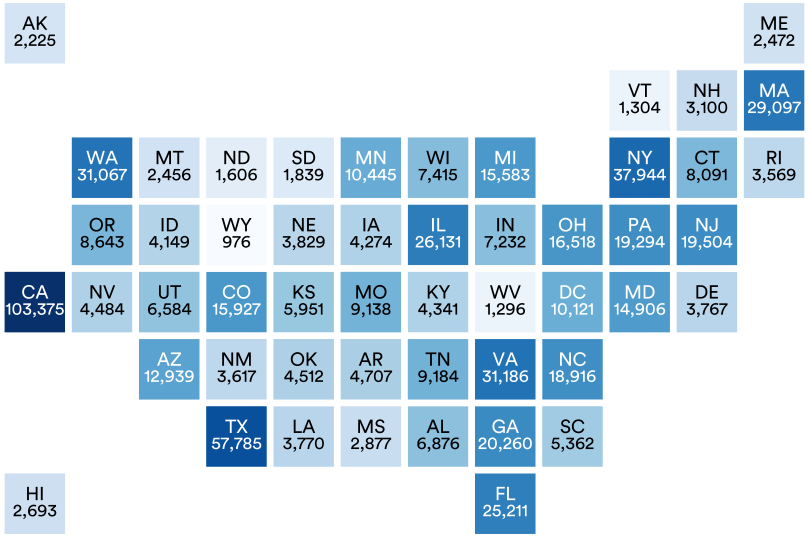



Figure 4.2.8

### Percentage of US states' job postings in AI, 2024

Source: Lightcast, 2024 | Chart: 2025 AI Index report

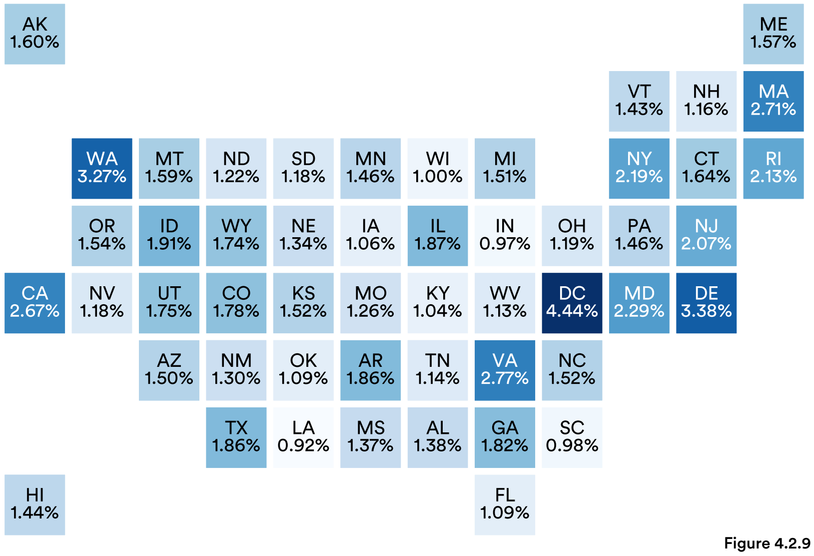



Figure 4.2.9

Figure 4.2.10 examines which U.S. states accounted for the largest proportion of AI job postings nationwide. In 2024, 15.7% of all AI job postings in the United States were for jobs based in California, followed by Texas (8.8%) and New York (5.8%).

Figure 4.2.11 illustrates trends in four states with a significant number of AI job postings: Washington, California, New York, and Texas. Each experienced a notable increase in the share of total AI-related job postings from 2023 to 2024.

**Percentage of US AI job postings by state, 2024**

Source: Lightcast, 2024 | Chart: 2025 AI Index report

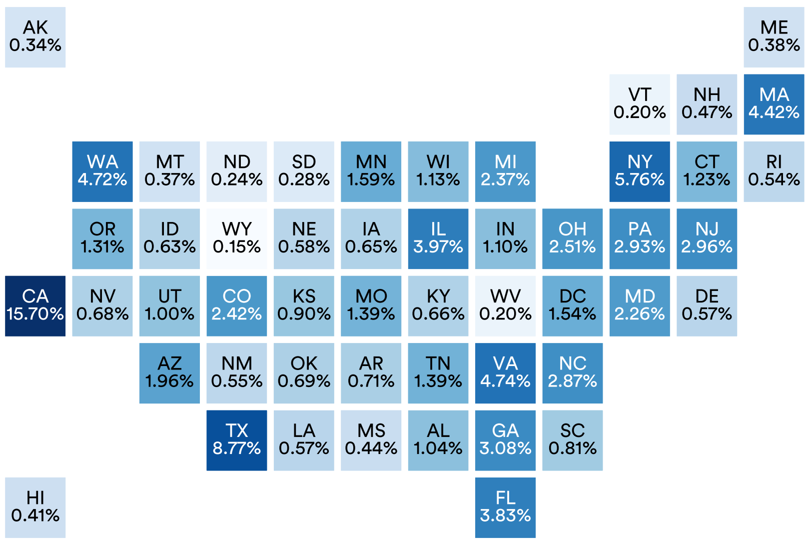



Figure 4.2.10

**Percentage of US states' job postings in AI by select US state, 2010–24**

Source: Lightcast, 2024 | Chart: 2025 AI Index report

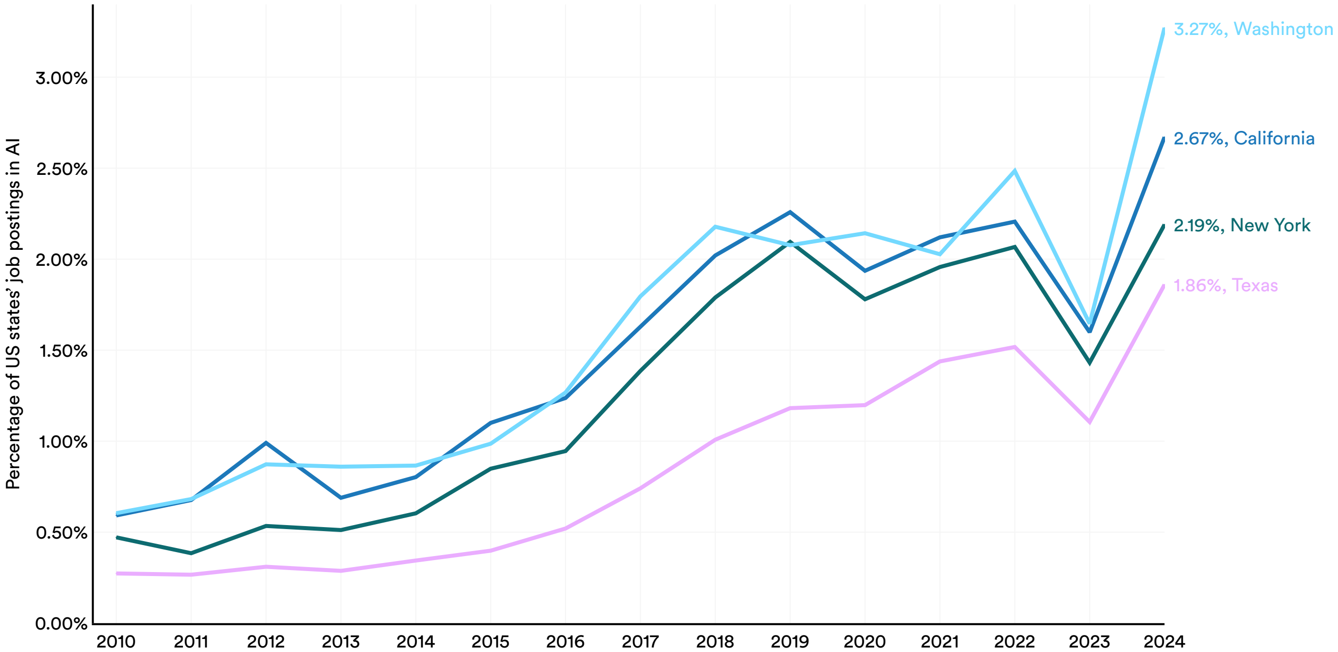



Figure 4.2.11

Figure 4.2.12 shows how AI-related job postings have been distributed across the top four states over time. In 2024, all four states reversed multiyear declines in their proportion of AI job postings—a particularly notable change in California and New York, both of which had experienced decreases since 2020.

**Percentage of US AI job postings by select US state, 2010–24**
Source: Lightcast, 2024 | Chart: 2025 AI Index report

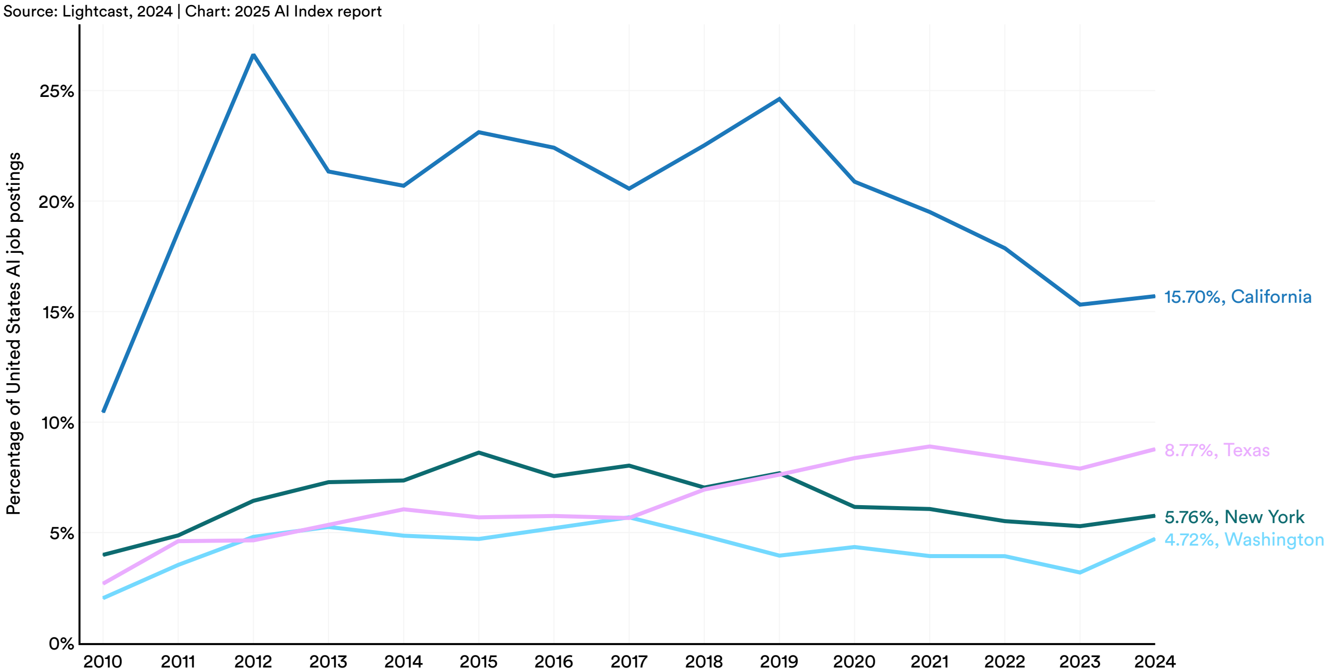



Figure 4.2.12

## AI Hiring

The hiring data presented in the AI Index is based on LinkedIn's Economic Graph, reflecting the jobs and skills of the platform's 1+ billion members. As such, the data is influenced by how members choose to use the platform, which can vary based on professional, social, and regional cultures, as well as overall site availability and accessibility. The AI Index notes that Hungary, Indonesia, India, and South Korea, included in the sample, have LinkedIn covering a lower portion of the labor force, so insights drawn about these countries should be interpreted with particular caution.

Figure 4.2.13 reports the relative AI hiring rate year-over-year ratio by geographic area. The overall hiring rate is computed as the percentage of LinkedIn members who added a new employer in the same period the job began, divided by the total number of LinkedIn members in the corresponding location. Conversely, the relative AI talent hiring rate is the year-over-year change in AI hiring relative to the overall hiring rate in the same geographic area.[4] Therefore, Figure 4.2.13 illustrates AI hiring vibrancy in those regions that have experienced the most significant rise in AI talent recruitment compared to the overall hiring rate. In 2024, the countries with the greatest relative AI hiring rates year-over-year were India (33.4%), followed by Brazil (30.8%) and Saudi Arabia (28.7%). This means, for example, that in 2024 in India, the ratio of AI talent hiring relative to overall hiring grew 33.4%.

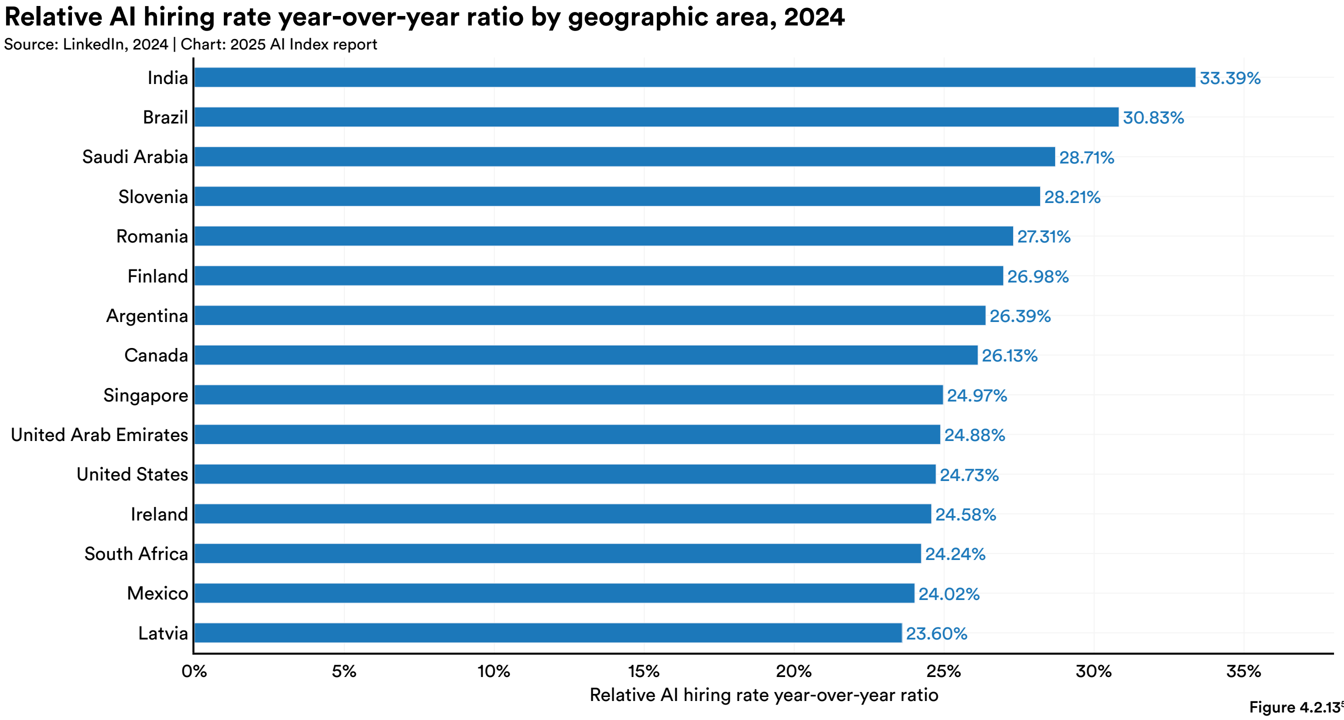



Figure 4.2.13[5]

Figure 4.2.14 showcases the year-over-year ratio of AI hiring by geographic areas over the past five years. Starting in 2024, several South American countries like Argentina, Brazil, and Chile have experienced notable upticks in AI hiring rates. Other countries that have recently experienced similar rises include Canada, India, South Africa, and the United States.

4 For each month, LinkedIn calculates the AI hiring rate in the geographic area, divides the AI hiring rate by the overall hiring rate in that geographic area, calculates the year-over-year change of this ratio, and then takes the 12-month moving average using the last 12 months.

5 For brevity, the visualization only includes the top 15 countries for this metric.

**Relative AI hiring rate year-over-year ratio by geographic area, 2018–24**
Source: LinkedIn, 2024 | Chart: 2025 AI Index report

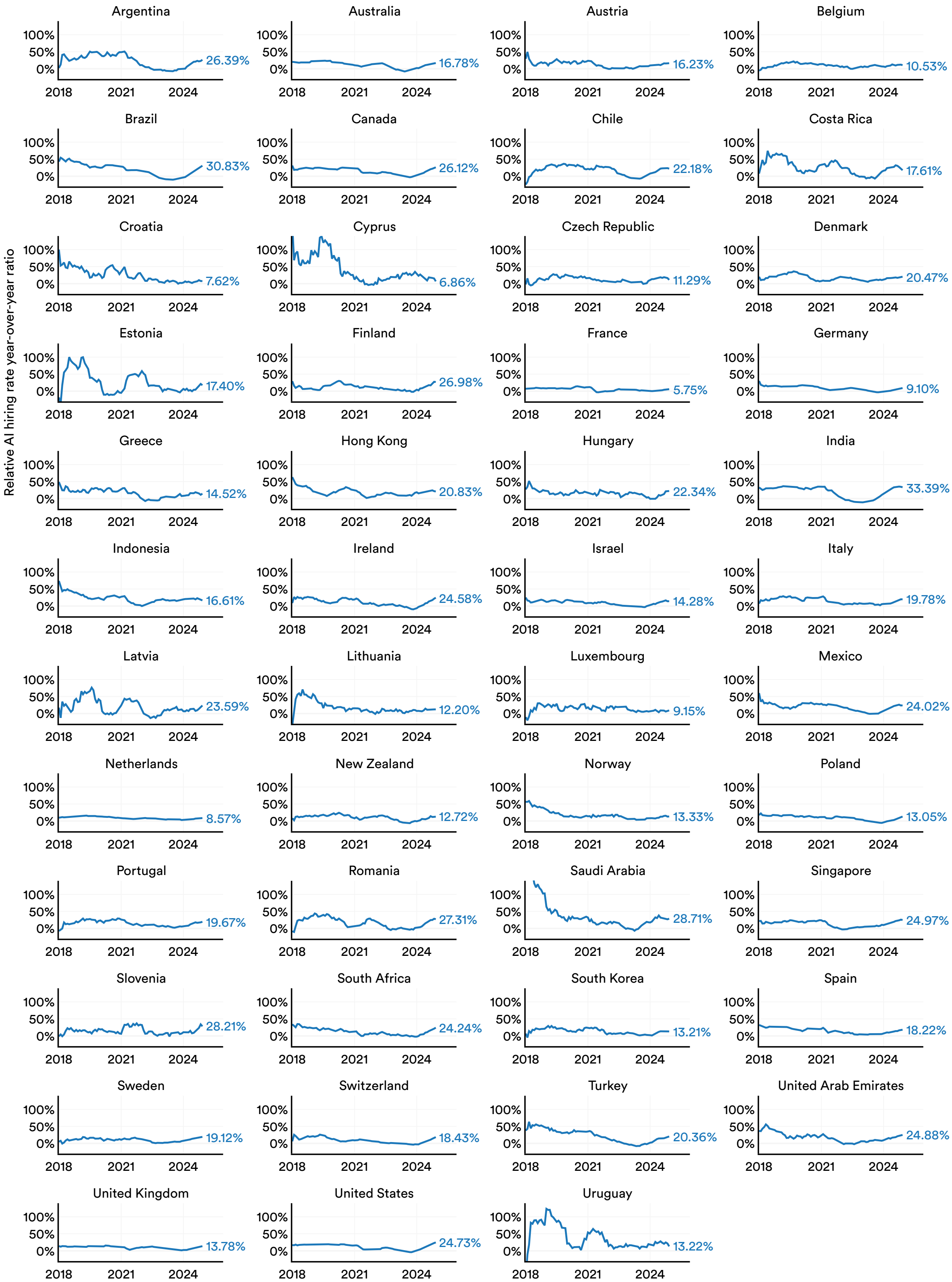



Figure 4.2.14

## AI Skill Penetration

Figure 4.2.15 and Figure 4.2.16 highlight relative AI skill penetration. The aim of this indicator is to measure the intensity of AI skills in a particular country or by industry or gender. The AI skill penetration rate signals the prevalence of AI skills across occupations or the intensity with which LinkedIn members utilize AI skills in their jobs. For example, the top 50 skills for the occupation of engineer are calculated based on the weighted frequency with which they appear in LinkedIn member profiles. If, for instance, four of the skills that engineers possess belong to the AI skill group, the penetration of AI skills among engineers is estimated to be 8% (4/50).

For the period from 2015 to 2024, the countries with the highest AI skill penetration rates were the United States (2.6) and India (2.5). They were followed by the United Kingdom (1.4), Germany (1.3), and Brazil (1.3). In the United States, therefore, the relative penetration of AI skills was 2.6 times greater than the global average across the same set of occupations.

**Relative AI skill penetration rate by geographic area, 2015–24**
Source: LinkedIn, 2024 | Chart: 2025 AI Index report

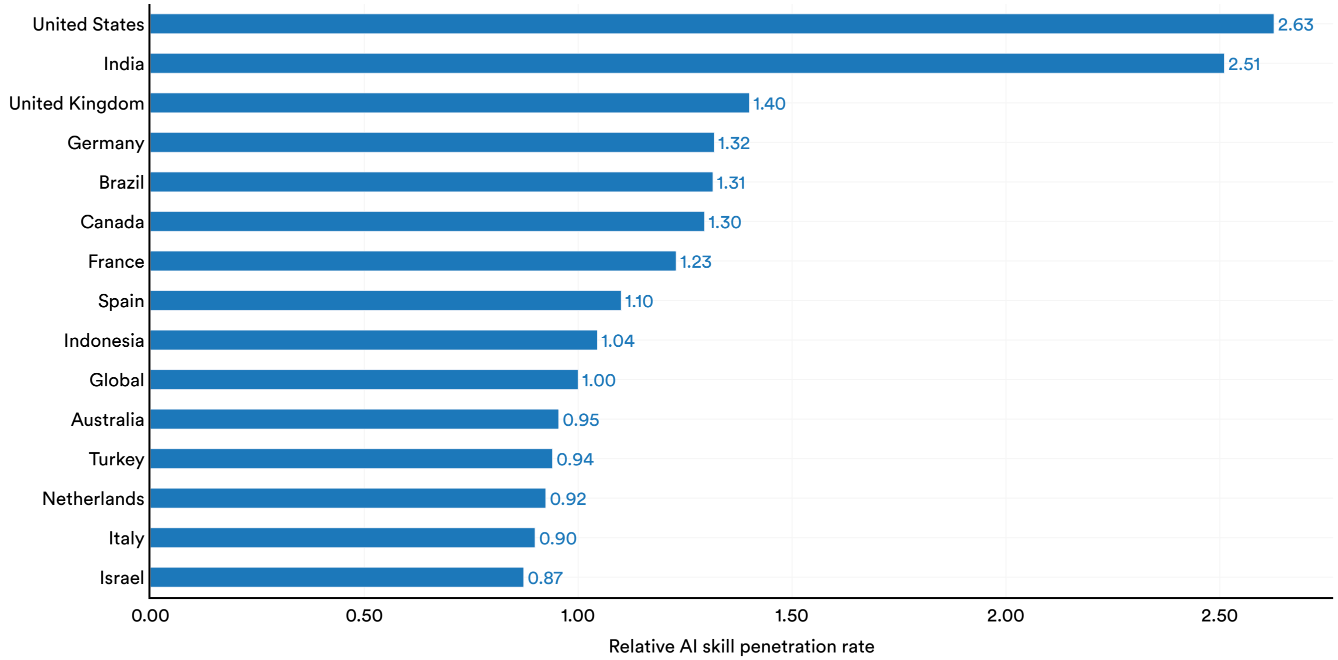



Figure 4.2.15

Figure 4.2.16 disaggregates AI skill penetration rates by gender across different countries or regions. A country's rate of 1.5 for women means female LinkedIn members in that country are 1.5 times more likely to list AI skills than the average member in all countries pooled together across the same set of occupations in the country. For all countries in the sample, with the exception of Saudi Arabia, the relative AI skill penetration rate is greater for men than women. India (1.9), United States (1.7), and Canada (1.0) have the highest reported relative AI skill penetration rates for women.

**Relative AI skill penetration rate across gender, 2015–24**
Source: LinkedIn, 2024 | Chart: 2025 AI Index report

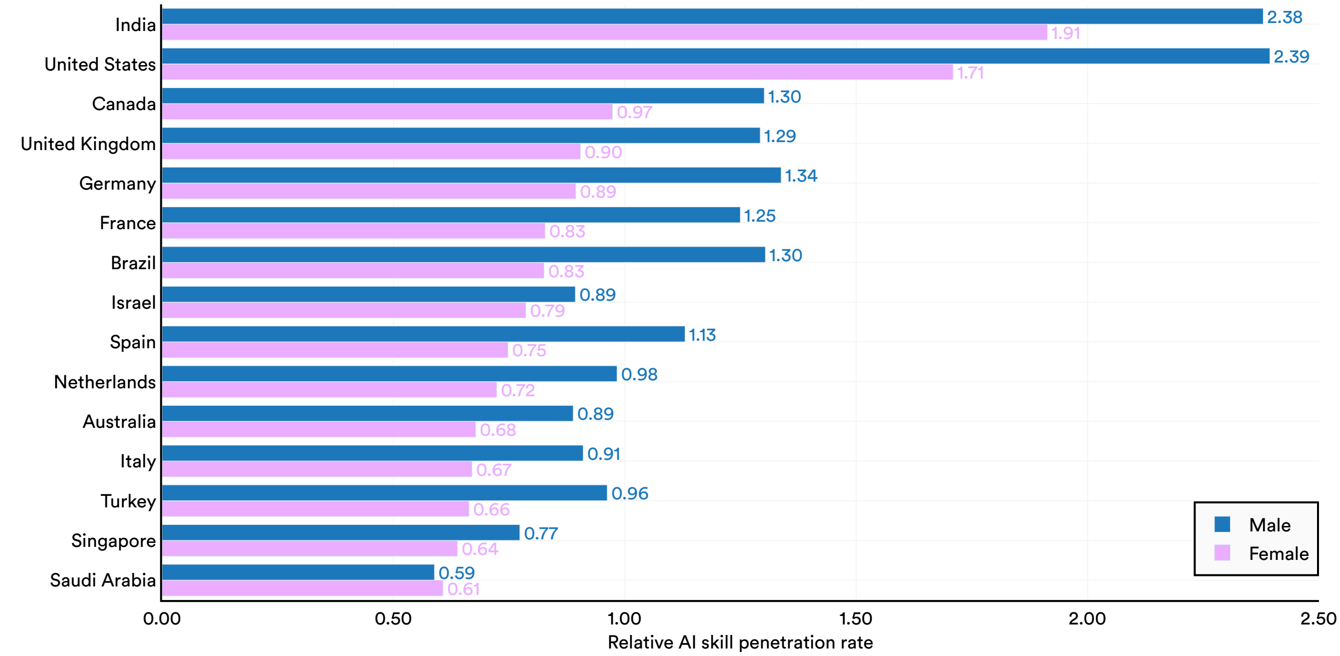



Figure 4.2.16

# AI Talent

Figures 4.2.17 and 4.2.18 examine AI talent by country. A LinkedIn member is considered to have AI talent if they have explicitly added AI skills to their profile, work or have worked in AI. Counts of AI talent are used to calculate talent concentration, or the portion of members who are AI talent. Note that concentration metrics may be influenced by LinkedIn coverage in these countries and should be used with caution.

Figure 4.2.17 shows AI talent concentration in various geographic areas. In 2024, the countries with the highest concentrations of AI talent include Israel (2.0%), Singapore (1.6%), and Luxembourg (1.4%). Figure 4.2.18 looks at the percent change in AI talent concentration for a selection of countries since 2016. During that time period, several major economies registered substantial increases in their AI talent pools. The countries showing the greatest increases are India (252%), Costa Rica (240%), and Portugal (237%).

**AI talent concentration by geographic area, 2024**
Source: LinkedIn, 2024 | Chart: 2025 AI Index report

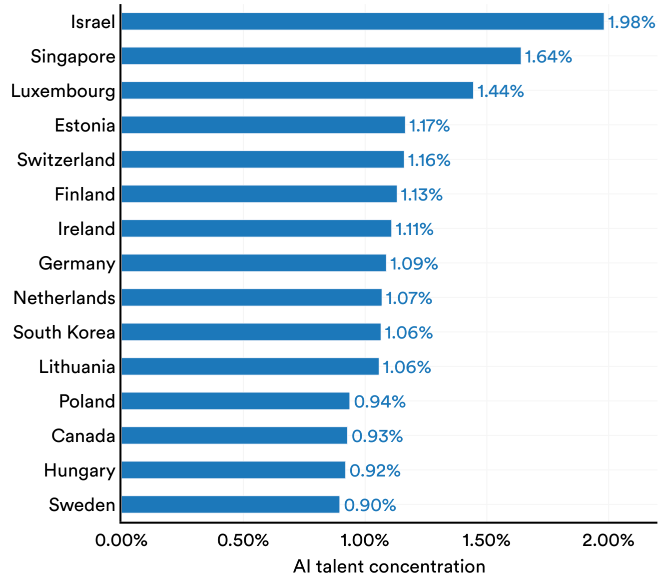



Figure 4.2.17

**Percentage change in AI talent concentration by geographic area, 2016 vs. 2024**
Source: LinkedIn, 2024 | Chart: 2025 AI Index report

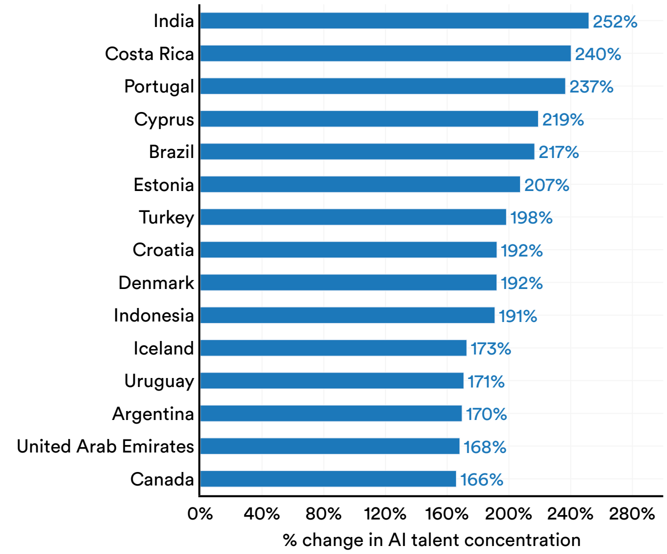



Figure 4.2.18

There are also notable gender differences in AI talent concentration. For every country included in the analysis sample, with the exception of India and Saudi Arabia, the concentration of AI talent was higher among men than women (Figure 4.2.19). Israel reported the highest concentration of female AI talent in 2024, at 1.6%.

### AI talent concentration by gender and geographic area, 2016–24

Source: LinkedIn, 2024 | Chart: 2025 AI Index report

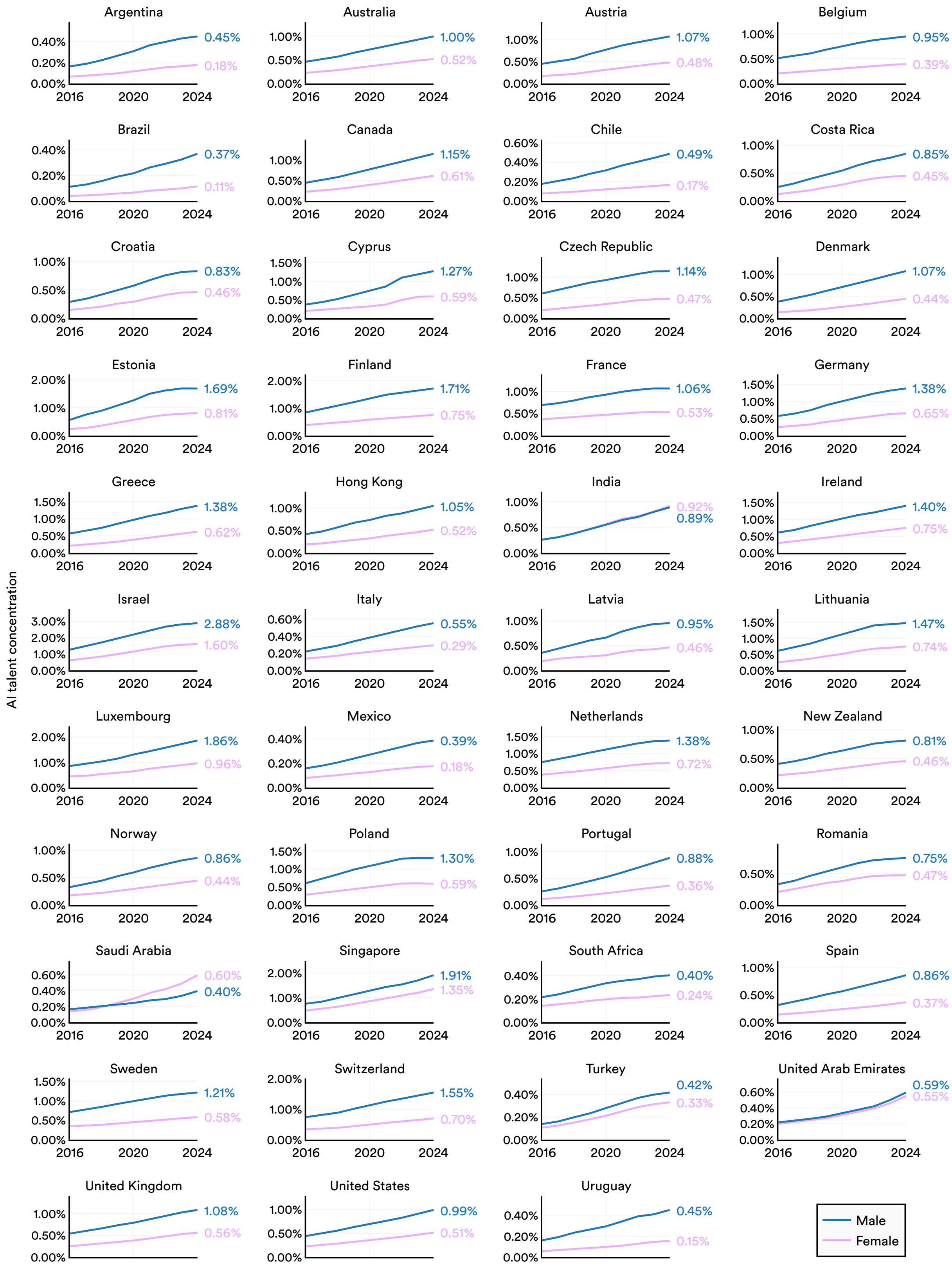



Figure 4.2.19

LinkedIn also tracks the gender distribution of AI talent (Figure 4.2.20). In 2024, it estimates that 69.5% of AI professionals on the platform are male, while 30.5% are female. This ratio has remained remarkably stable over time.

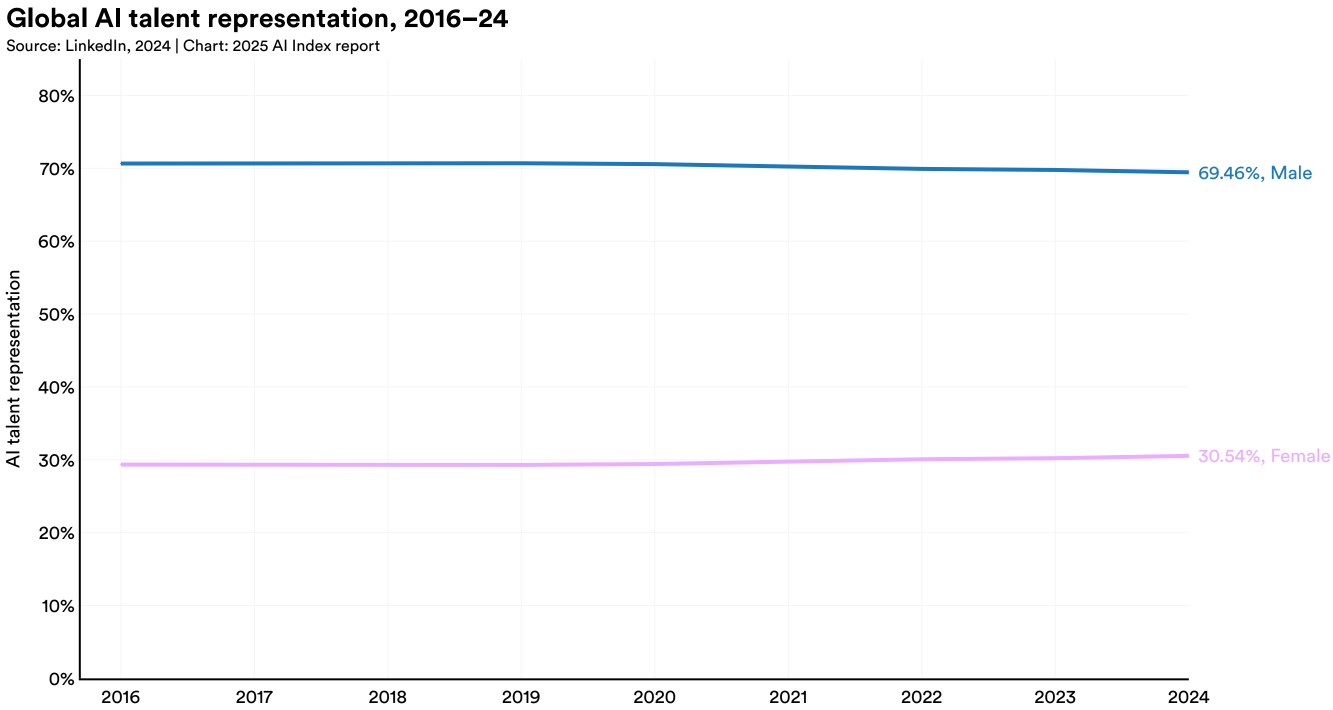



Figure 4.2.20

LinkedIn's data on AI talent can also be broken down by country. In every country in the sample, men proportionally outnumber women in AI roles (Figure 4.2.21). New Zealand and Romania have the most balanced gender distribution, while Brazil and Chile have the least.

### AI talent representation by gender and geographic area, 2016–24

Source: LinkedIn, 2024 | Chart: 2025 AI Index report

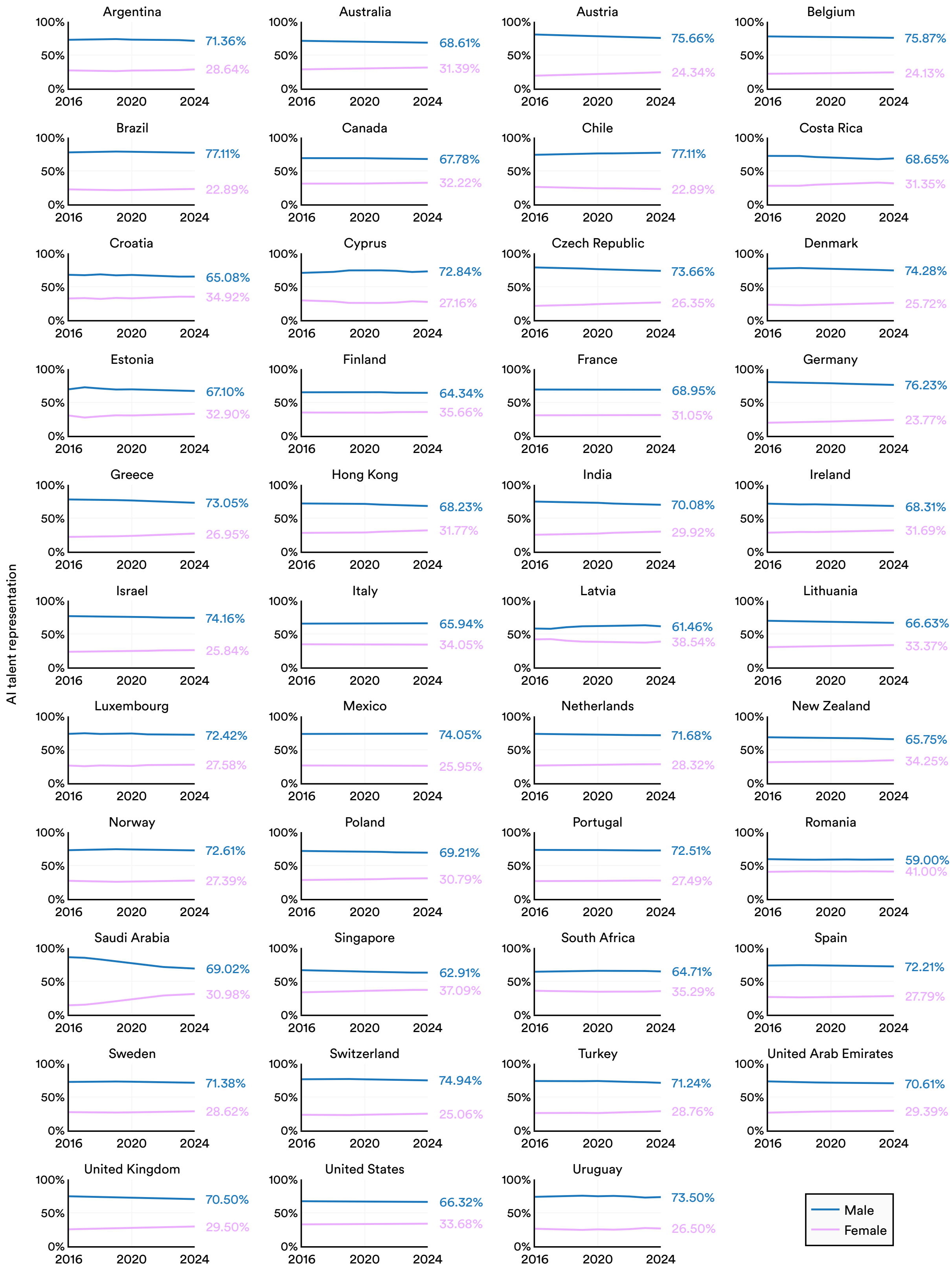



Figure 4.2.21

LinkedIn data provides insights on the AI talent gained or lost due to migration trends.[6] Net flows are defined as total arrivals minus departures within the given time period. A positive net AI talent migration figure indicates that more talent is coming into the geographic area than departing. A negative figure indicates that more talent is departing than coming into the geographic area. Figure 4.2.22 examines net AI talent migration per 10,000 LinkedIn members by geographic area. The geographic areas that report the greatest per capita incoming migration of AI talent are Luxembourg (8.9), Cyprus (4.7), and United Arab Emirates (4.1).

Net AI talent migration per 10,000 LinkedIn members by geographic area, 2024

Source: LinkedIn, 2024 | Chart: 2025 AI Index report

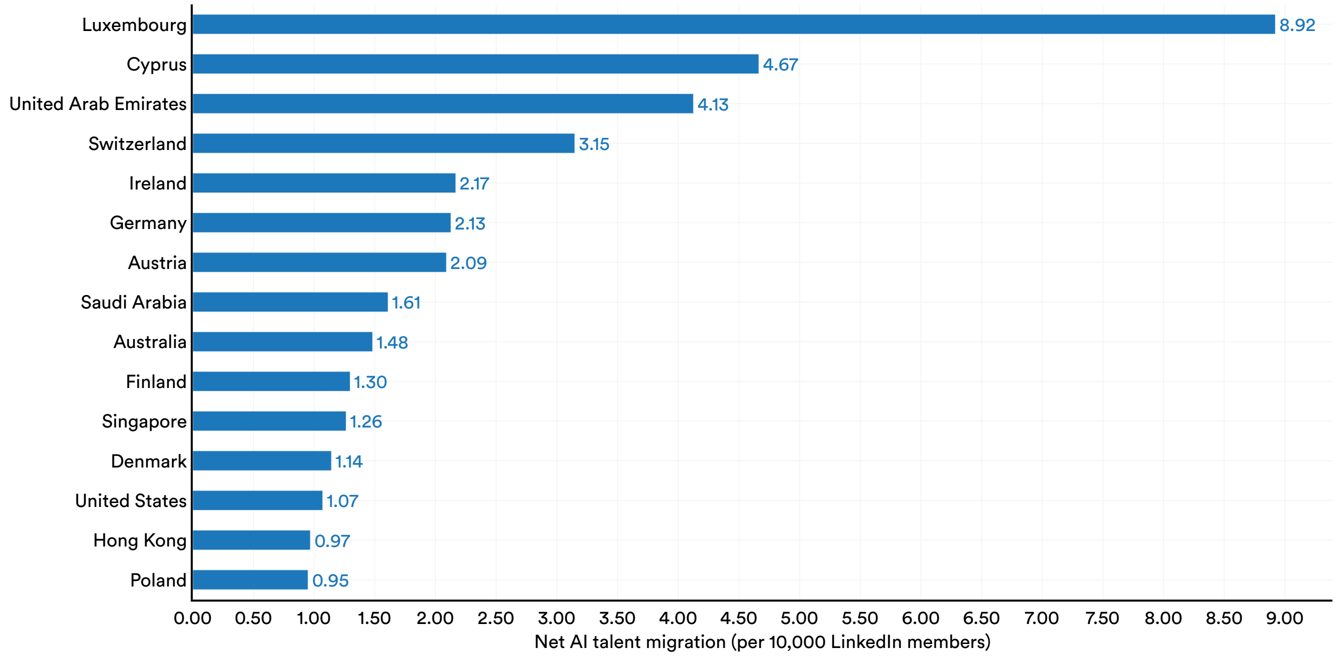



Figure 4.2.22

Figure 4.2.23 documents AI talent migration data over time. In the last few years, Israel, the Netherlands, and Canada, among other countries, have seen declining net AI talent migration figures, suggesting that less AI talent has been flowing into these countries. Countries with rising talent flows include the United Arab Emirates, Saudi Arabia, and Luxembourg.

6 LinkedIn membership varies considerably among countries, which makes interpreting absolute movements of members from one country to another difficult. To compare migration flows between countries fairly, migration flows are normalized for the country of interest. For example, if country A is the country of interest, all absolute net flows into and out of country A (regardless of origin and destination countries) are normalized based on LinkedIn membership in country A at the end of each year and multiplied by 10,000. Hence, this metric indicates relative talent migration of all other countries to and from country A.

**Net AI talent migration per 10,000 LinkedIn members by geographic area, 2019–24**
Source: LinkedIn, 2024 | Chart: 2025 AI Index report

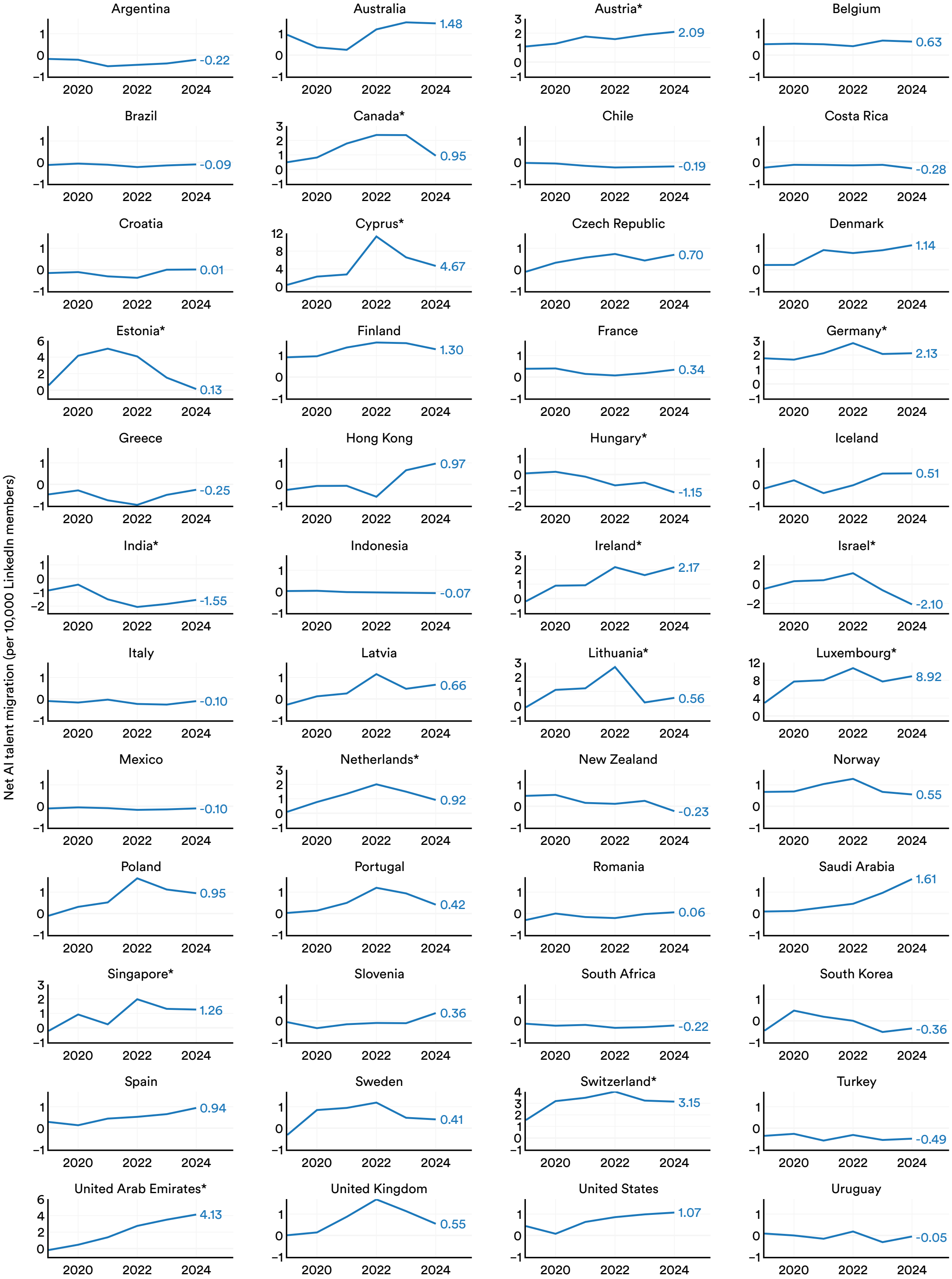



Figure 4.2.23[7]

7 Asterisks indicate that a country's y-axis label is scaled differently than the y-axis label for the other countries.

**Highlight:**

## Measuring AI's Current Economic Integration

Analysis of over 4 million real-world AI interactions provides comprehensive empirical evidence of how AI is being integrated across economic sectors. A recent Anthropic study examined usage patterns of their AI model classifying users via the U.S. Department of Labor's O*NET occupational framework, offering concrete data on which industries and job functions are leveraging AI. More specifically, the Anthropic team analyzed user conversations with their Claude.AI model to identify the tasks and occupations most frequently using AI.

The analysis reveals that while all sectors make some use of current AI, the dominant sectors are technical and creative. As shown in Figure 4.2.24, computer and mathematical occupations dominate, accounting for 37.2% of all AI interactions. Arts, design, entertainment, sports, and media occupations follow at 10.3%, with educational instruction and library occupations also showing significant adoption.

**Occupational representation in Claude usage data vs. US workforce distribution**
Source: Handa et al., 2025 | Chart: 2025 AI Index report

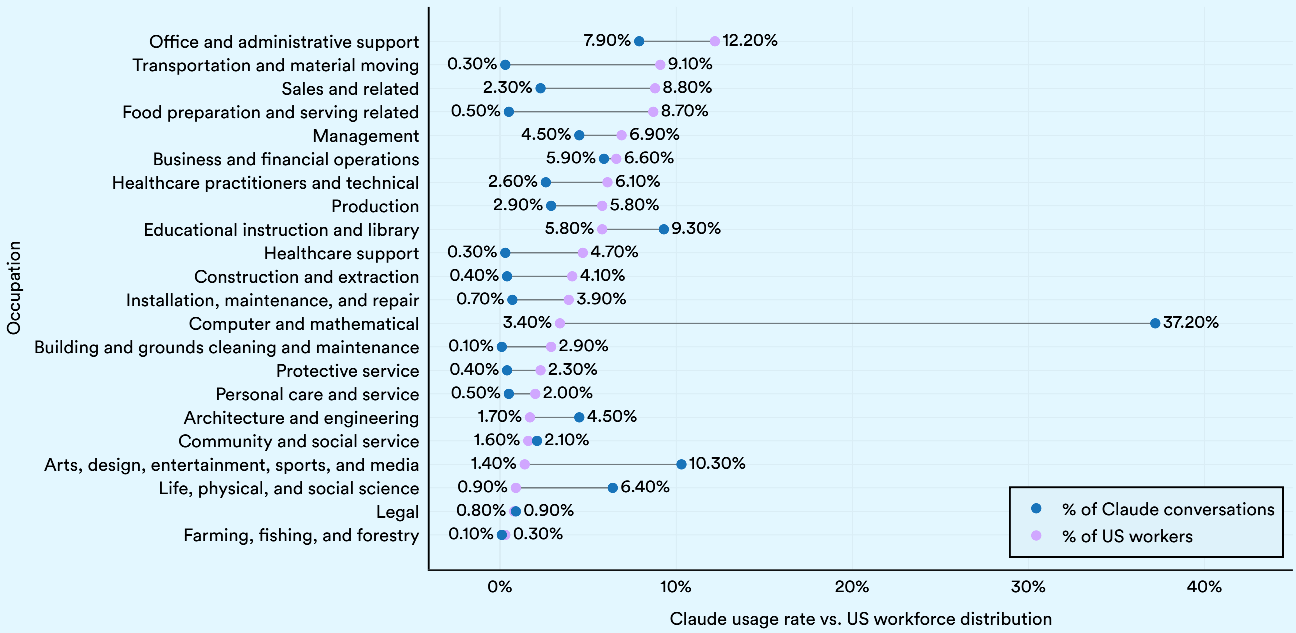



Figure 4.2.23

**Highlight:**

# Measuring AI's Current Economic Integration (cont'd)

The AI usage patterns demonstrate a clear connection to wage levels and required skills. Figure 4.2.25 illustrates that AI adoption peaks in occupations within the upper wage quartile but drops significantly at both wage extremes. Jobs requiring considerable preparation (typically bachelor's degree-level) show 50% higher usage than their baseline workforce representation, while both minimal-preparation and extensive-preparation roles show lower adoption rates.

**Occupational usage of Claude by median annual wage**

Source: Handa et al., 2025 | Chart: 2025 AI Index report

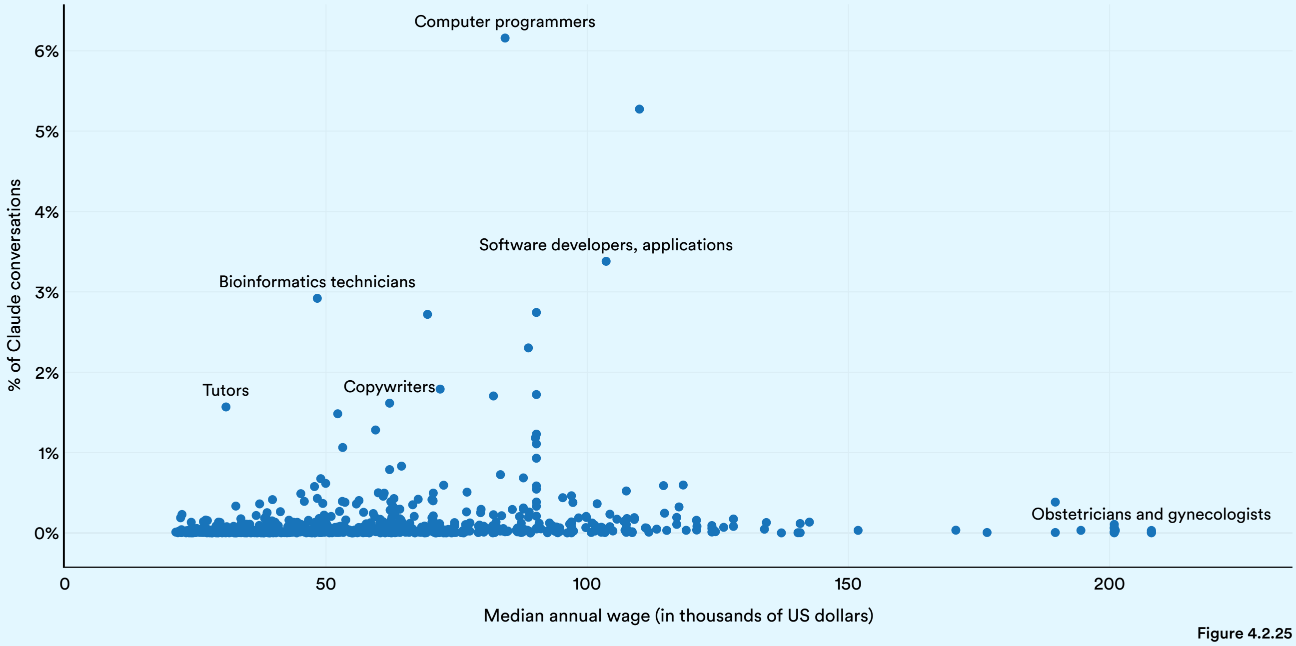



Figure 4.2.25

**Highlight:**

## Measuring AI's Current Economic Integration (cont'd)

The Anthropic study finds that approximately 36% of occupations use AI for at least a quarter of their associated tasks (Figure 4.2.26), indicating substantial penetration beyond technical fields. However, deep integration remains rare: Only about 4% of occupations show AI usage across 75% or more of their tasks, suggesting that wholesale automation of entire job categories is not yet occurring.

### Depth of AI usage across organizations

**Source:** Handa et al., 2025

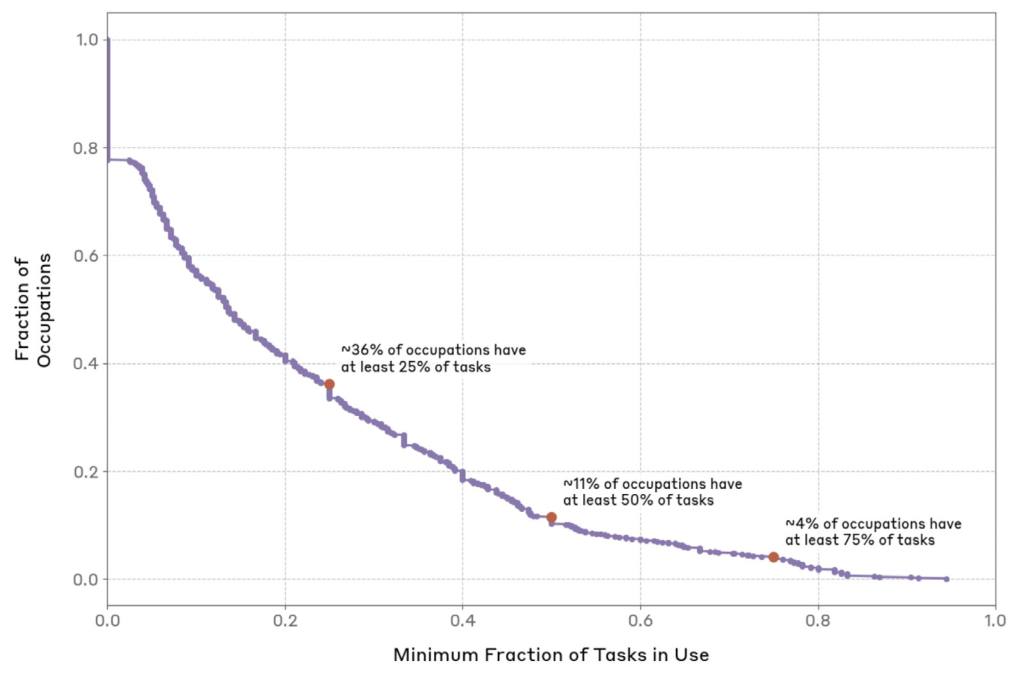



Figure 4.2.26

**Highlight:**

## Measuring AI's Current Economic Integration (cont'd)

The analysis reveals how AI is being used within organizations. As shown in Figure 4.2.27, 57% of AI interactions demonstrate augmentative patterns (enhancing human capabilities) while 43% show automation patterns. This split suggests current AI implementation tends toward complementing rather than replacing human workers. The study finds that cognitive skills like critical thinking and writing show high presence in AI interactions, while physical and managerial skills show minimal presence (Figure 4.2.28).

**Percentage of Claude conversations by type of task execution**

Source: Handa et al., 2025 | Chart: 2025 AI Index report

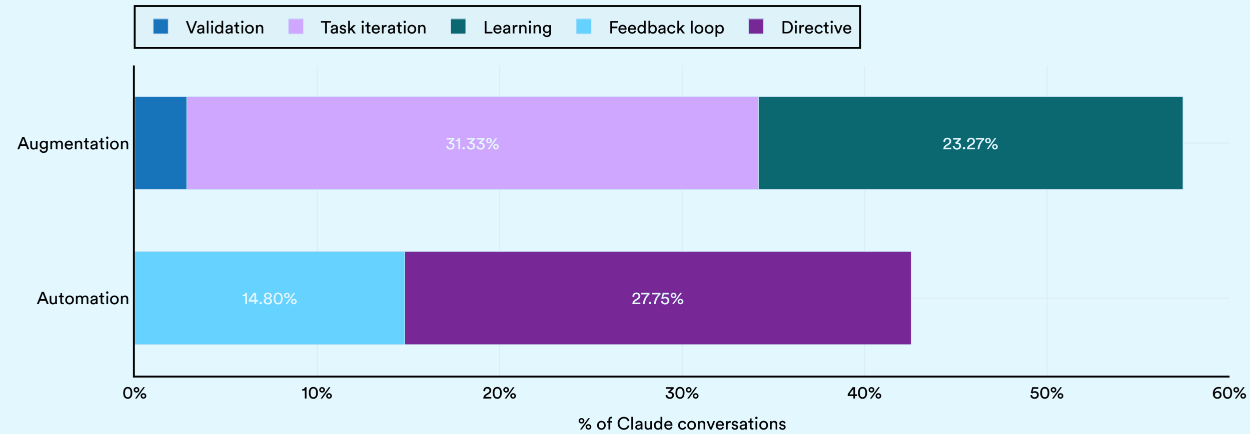



Figure 4.2.27

**Distribution of occupational skills exhibited by Claude in conversations**

Source: Handa et al., 2025

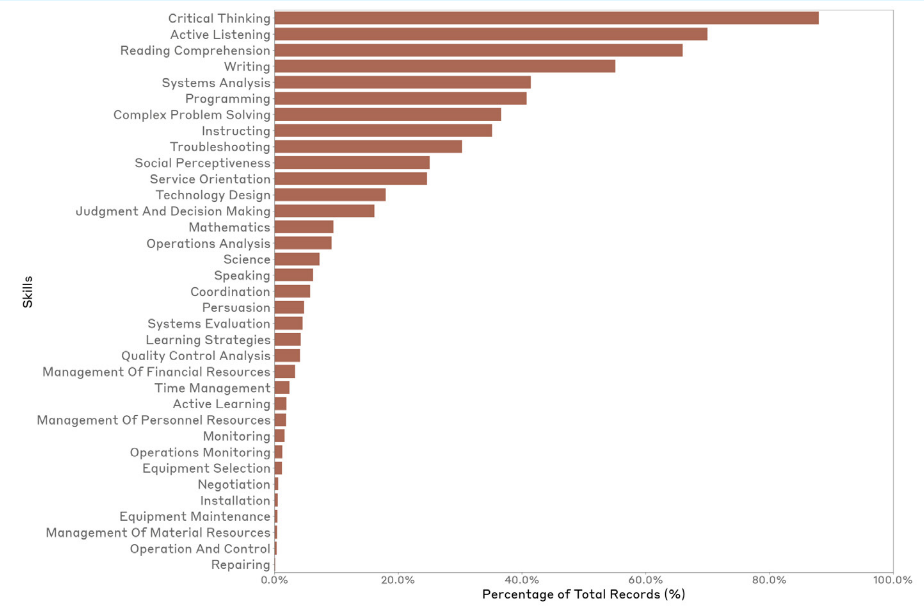



Figure 4.2.28

This section monitors AI investment trends, leveraging data from Quid, which analyzes investment data from more than 8 million companies worldwide, both public and private. Employing natural language processing, Quid sifts through vast unstructured datasets—including news aggregations, blogs, company records, and patent databases—to detect patterns and insights. Additionally, Quid is constantly expanding its database to include more companies, sometimes resulting in higher reported investment volumes for specific years. For the first time, this year's investment section in the AI Index includes data on generative AI investments.

# 4.3 Investment

## Corporate Investment

Figure 4.3.1 illustrates the trend in global corporate AI investment from 2013 to 2024, including mergers and acquisitions, minority stakes, private investments, and public offerings.

In 2024, the total investment grew to $252.3 billion, an increase of 25.5% from 2023. The most significant upturn occurred in private investment, which rose by 44.5% compared with the previous year, while mergers and acquisitions increased by 12.1%. Over the past decade, AI-related investments have increased nearly thirteenfold.

**Global corporate investment in AI by investment activity, 2013–24**

Source: Quid, 2024 | Chart: 2025 AI Index report

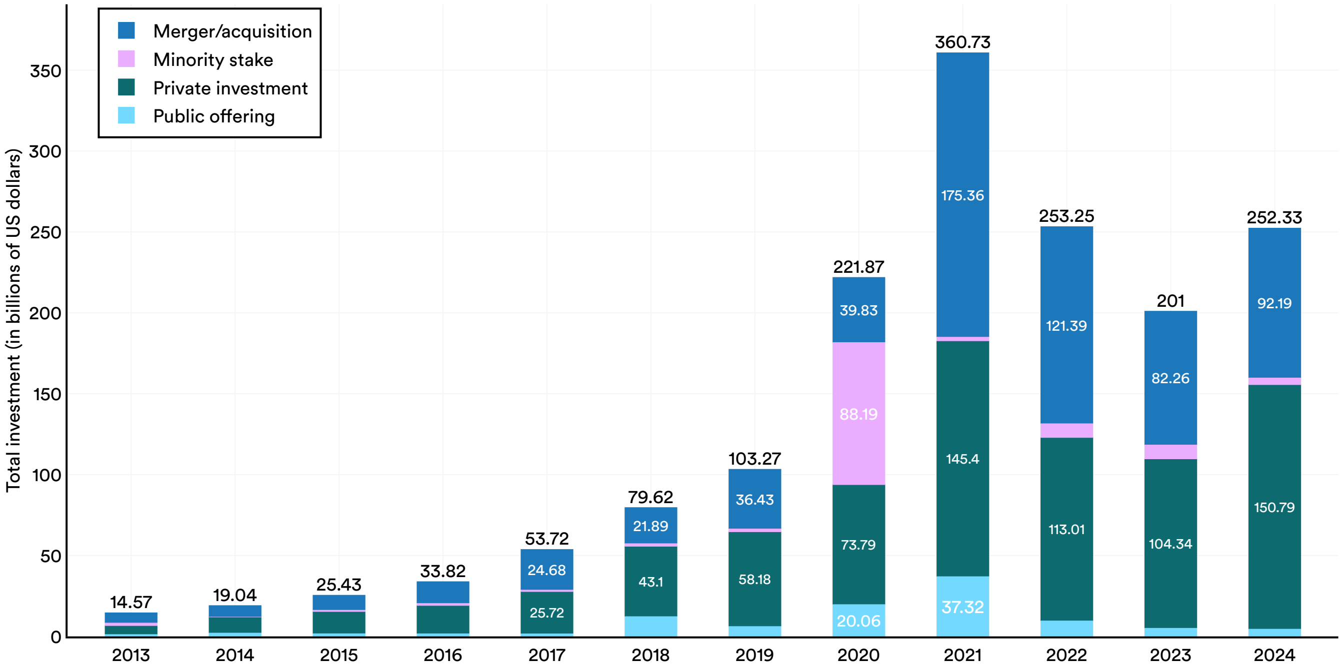



Figure 4.3.1

# Startup Activity

This section analyzes private investment trends in AI startups that have received over $1.5 million in investment since 2013.

### Global Trends

Global private AI investment increased 44.5% between 2023 and 2024, marking the first year-over-year growth since 2021 (Figure 4.3.2). Despite recent fluctuations, private AI investment globally has grown substantially in the last decade.

**Global private investment in AI, 2013–24**
Source: Quid, 2024 | Chart: 2025 AI Index report

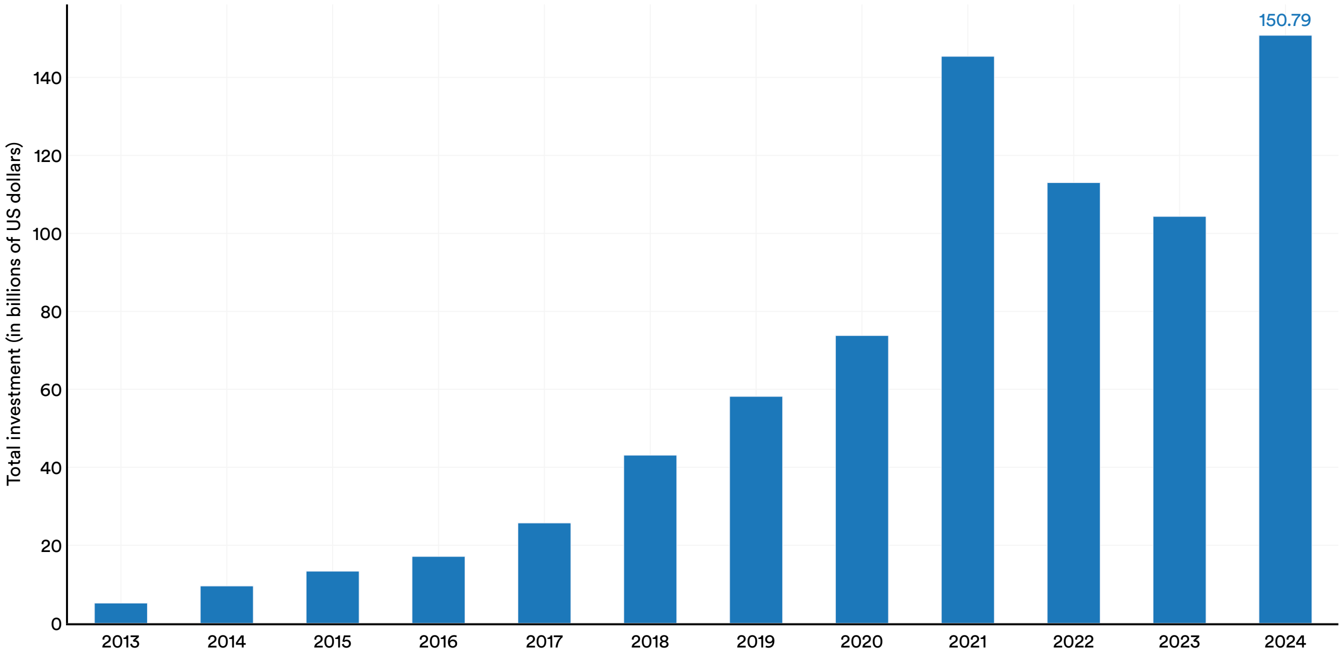



Figure 4.3.2

Funding for generative AI continued to increase sharply (Figure 4.3.3). In 2024, the sector attracted $33.9 billion, representing an 18.7% increase from 2023 and over 8.5 times the investment of 2022. Furthermore, generative AI accounted for more than a fifth of all AI-related private investment in 2024.

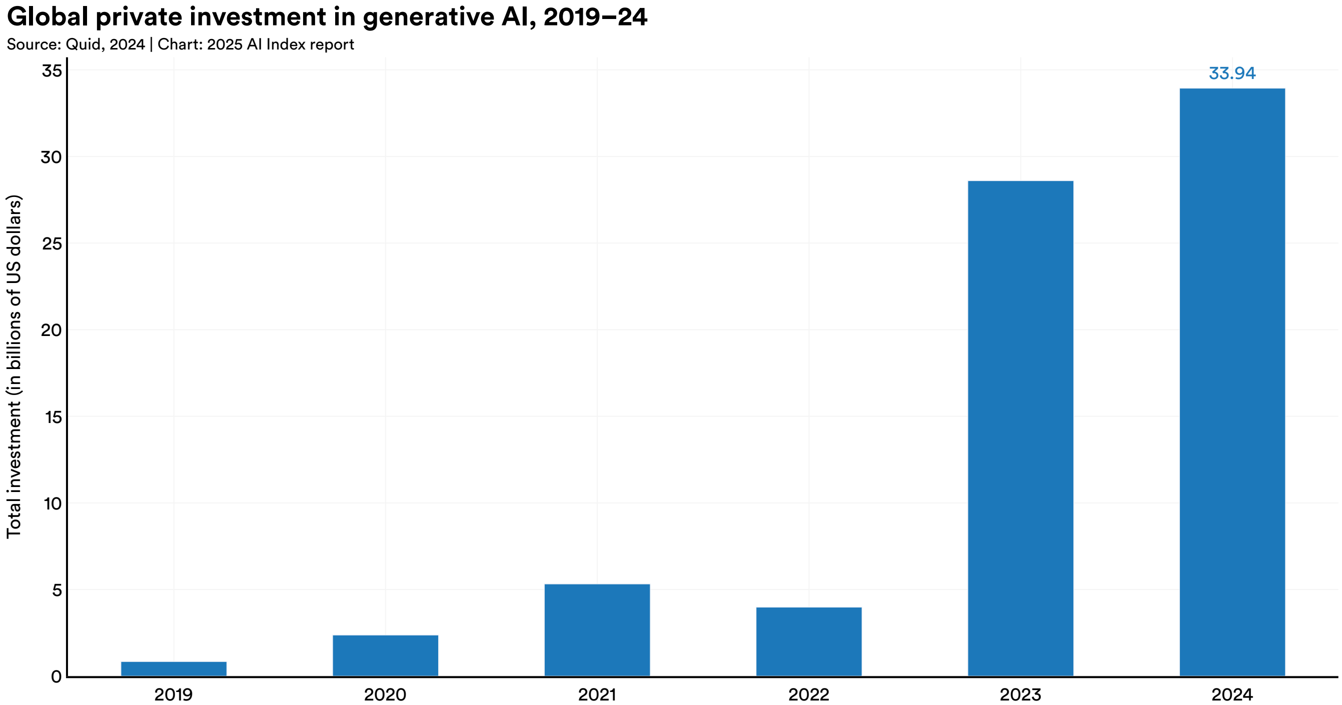



Figure 4.3.3

The number of newly funded AI companies in 2024 jumped to 2,049, an 8.4% increase over the previous year (Figure 4.3.4). In addition, 2024 registered an increase in the number of newly funded generative AI companies, with 214 new startups receiving funding, compared to 179 in 2023, and 31 in 2019 (Figure 4.3.5).

**Number of newly funded AI companies in the world, 2013–24**

Source: Quid, 2024 | Chart: 2025 AI Index report

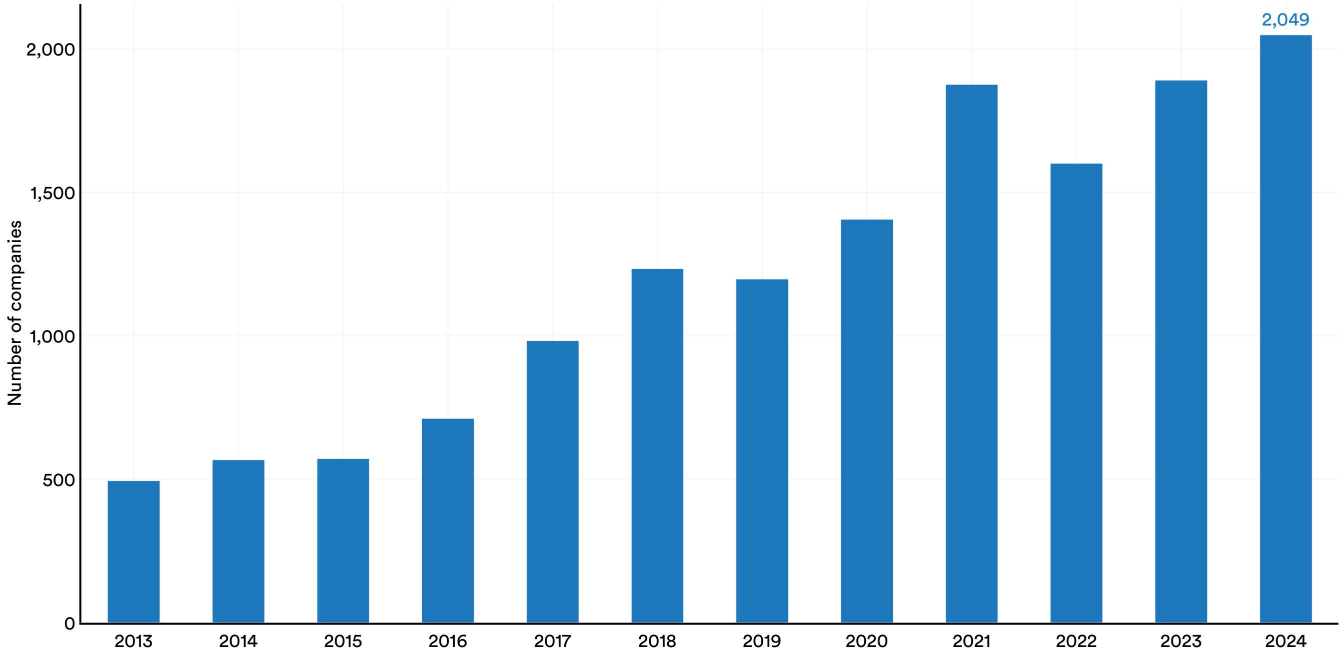



Figure 4.3.4

**Number of newly funded generative AI companies in the world, 2019–24**

Source: Quid, 2024 | Chart: 2025 AI Index report

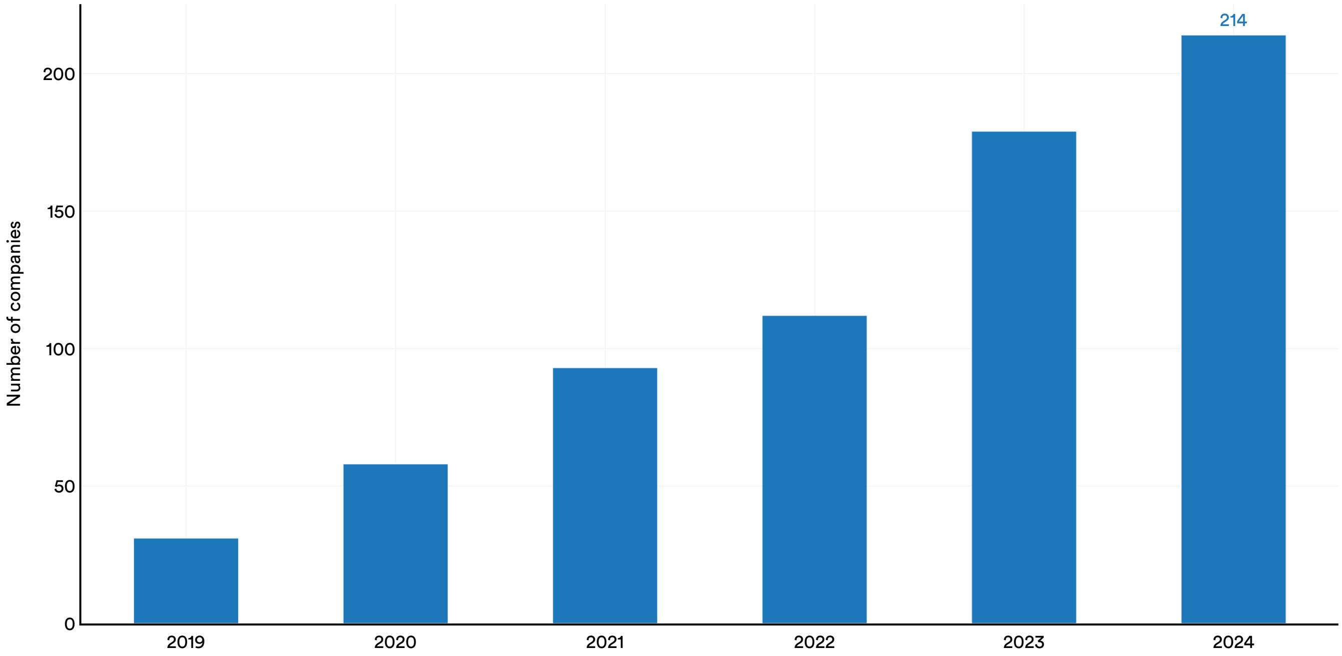



Figure 4.3.5

Figure 4.3.6 visualizes the average size of AI private investment events, calculated by dividing the total yearly AI private investment by the total number of AI private investment events. From 2023 to 2024, the average increased significantly, growing from $31.6 million to $45.4 million.

Figure 4.3.7 reports AI funding events disaggregated by size. In 2024, AI private investment events increased across funding size categories exceeding $100 million and decreased or remained constant in smaller categories. In 2024, there were 15 AI private investment events that involved funding sizes greater than $1 billion.

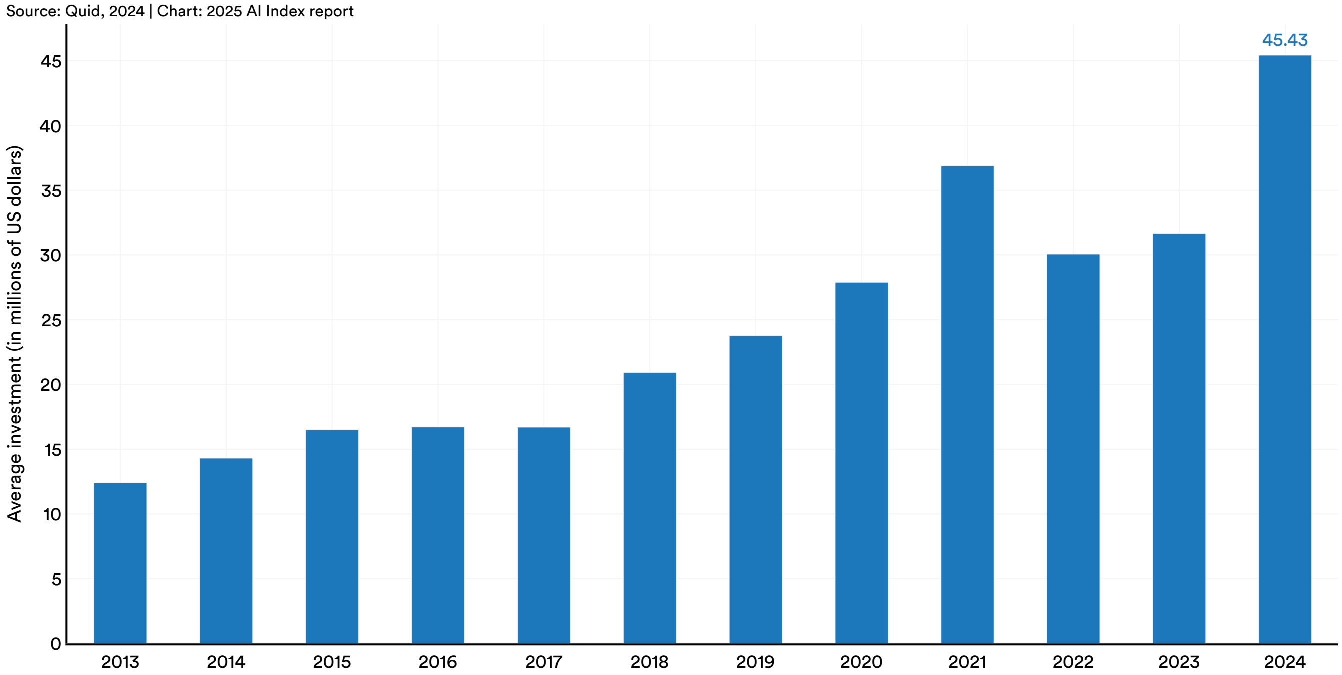



Figure 4.3.6

**Global AI private investment events by funding size, 2023 vs. 2024**
Source: Quid, 2024 | Table: 2025 AI Index report

| Funding size | 2023 | 2024 |
|---|---|---|
| Over 1 billion | 9 | 15 |
| 500 million – 1 billion | 9 | 20 |
| 100 million – 500 million | 134 | 143 |
| 50 million – 100 million | 200 | 196 |
| Under 50 million | 2,945 | 2,945 |
| Undisclosed | 680 | 207 |
| Total | 3,977 | 3,526 |

Figure 4.3.7

## Regional Comparison by Funding Amount

The United States once again led the world in terms of total AI private investment. In 2024, the $109.1 billion invested in the United States was 11.7 times greater than the amount invested in the next highest country, China ($9.3 billion), and 24.1 times the amount invested in the United Kingdom ($4.5 billion) (Figure 4.3.8). Other notable countries that rounded out the top 15 in 2024 include Sweden ($4.3 billion), Austria ($1.5 billion), the Netherlands ($1.1 billion), and Italy ($0.9 billion).

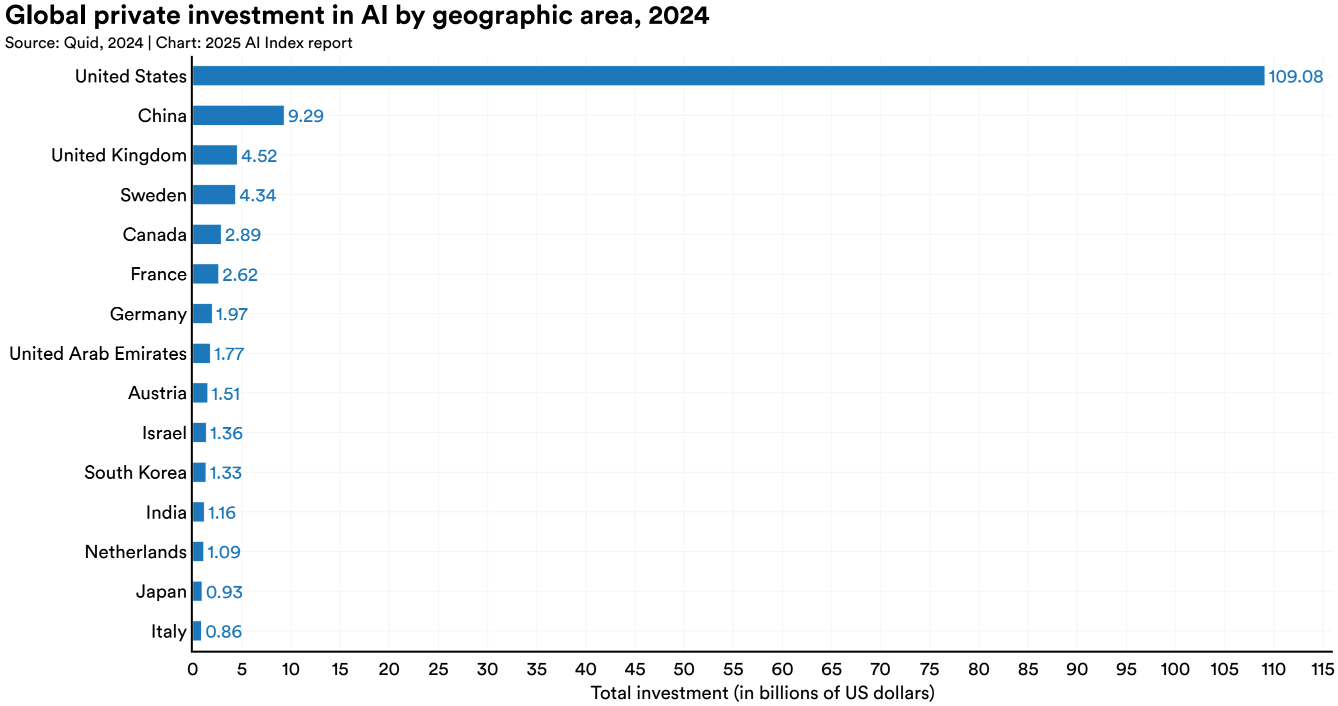



Figure 4.3.8

When aggregating private AI investments since 2013, the country rankings remain the same: The United States leads with $470.9 billion invested, followed by China with $119.3 billion, and the United Kingdom with $28.2 billion (Figure 4.3.9). Other countries that have attracted significant AI investment over the past decade include Israel ($15.0 billion), Singapore ($7.3 billion), and Sweden ($7.3 billion).

**Global private investment in AI by geographic area, 2013–24 (sum)**
Source: Quid, 2024 | Chart: 2025 AI Index report

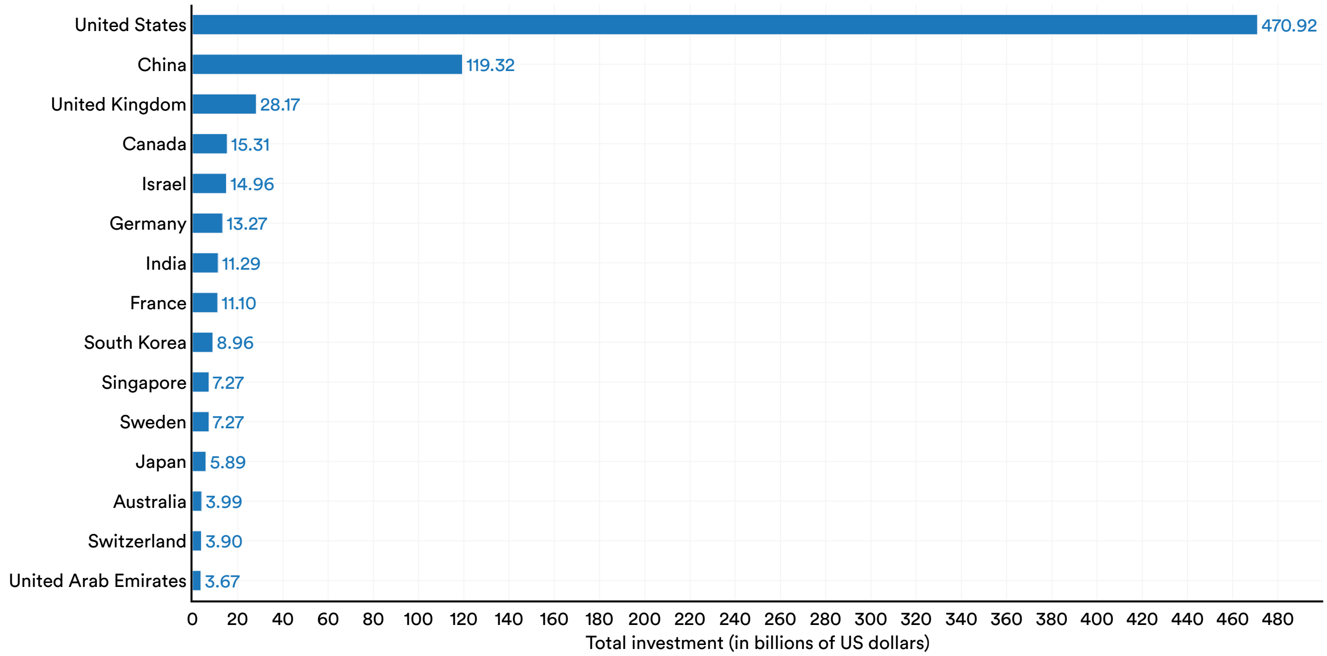



Figure 4.3.9

Figure 4.3.10, which looks at AI private investment over time by geographic area, suggests that the gap in private investments between the United States and other regions is widening. While AI private investments have decreased in China (-1.9%) and increased in Europe (+60%) since 2023, the United States has seen a significant increase (+50.7%) during the same period—and a +78.3% increase since 2022.

**Global private investment in AI by geographic area, 2013–24**
Source: Quid, 2024 | Chart: 2025 AI Index report

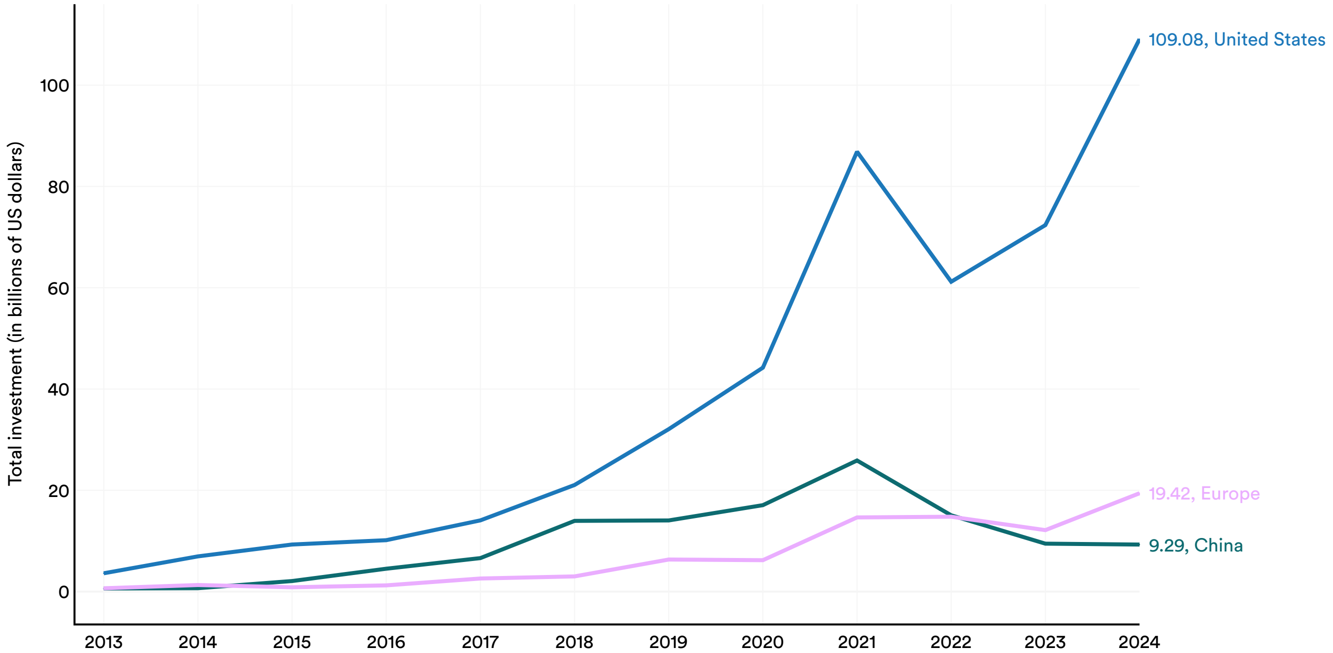



Figure 4.3.10

The disparity in regional AI private investment becomes particularly pronounced when examining generative AI-related investments. For instance, in 2023, the United States outpaced the combined investments of China and Europe in generative AI by approximately $21.8 billion (Figure 4.3.11). By 2024, this gap widened to $25.4 billion.

**Global private investment in generative AI by geographic area, 2019–24**
Source: Quid, 2024 | Chart: 2025 AI Index report

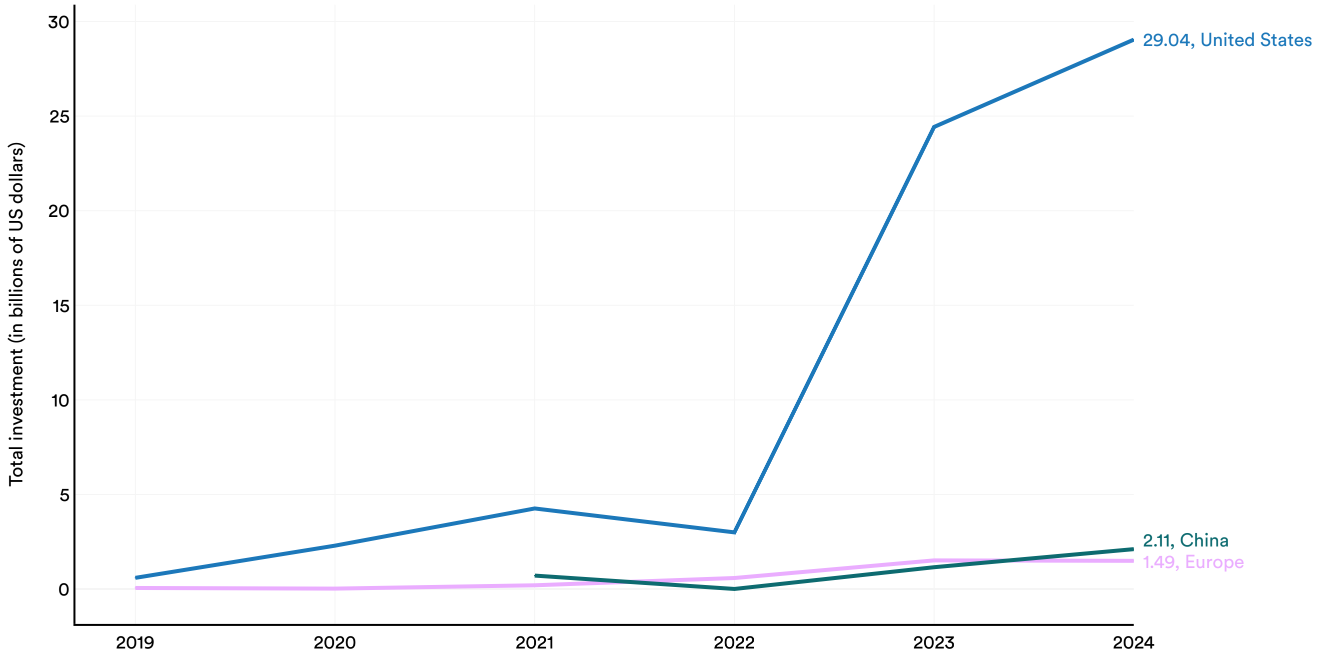



Figure 4.3.11

## Regional Comparison by Newly Funded AI Companies

This section examines the number of newly funded AI companies across different geographic regions. Consistent with trends in private investment, the United States leads all regions with 1,073 new AI companies, followed by the United Kingdom with 116, and China with 98 (Figure 4.3.12).

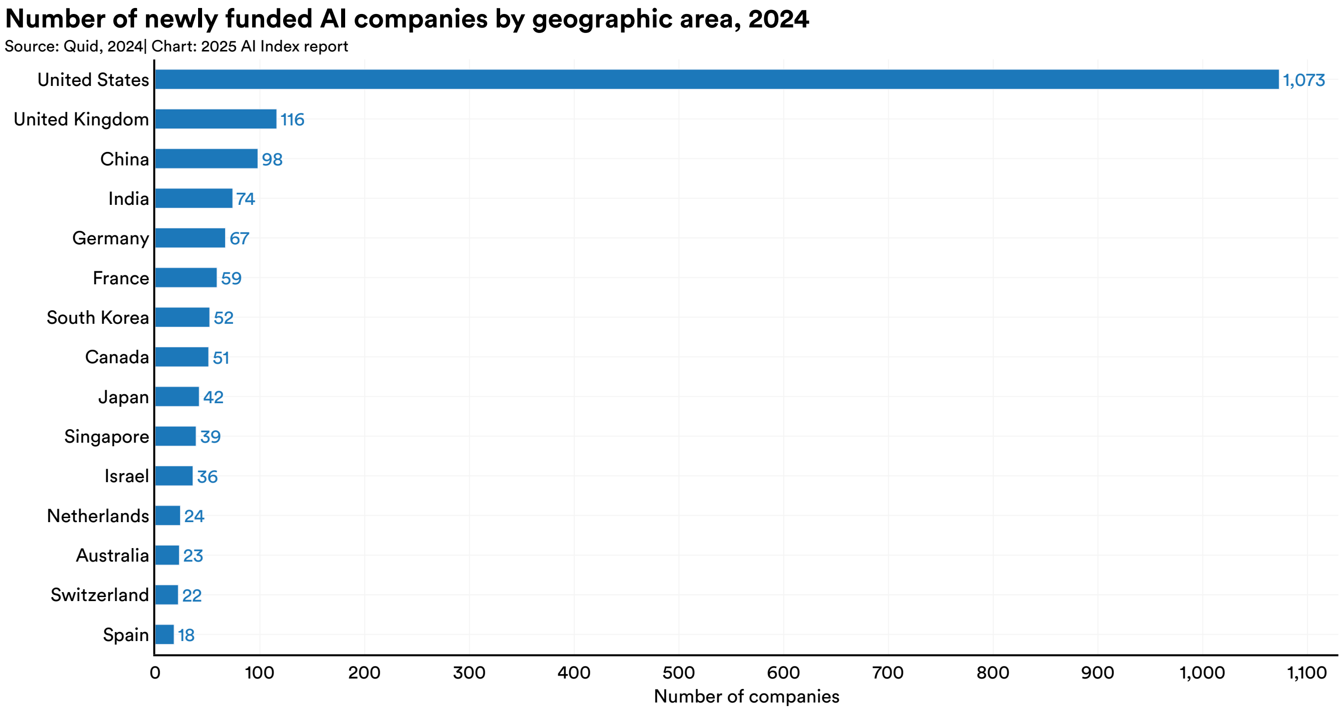



Figure 4.3.12

A similar trend is evident in the aggregate data since 2013. In the last decade, the number of newly funded AI companies in the United States is around 4.3 times the amount in China, and 7.9 times the amount in the United Kingdom (Figure 4.3.13).

### Number of newly funded AI companies by geographic area, 2013–24 (sum)

Source: Quid, 2024 | Chart: 2025 AI Index report

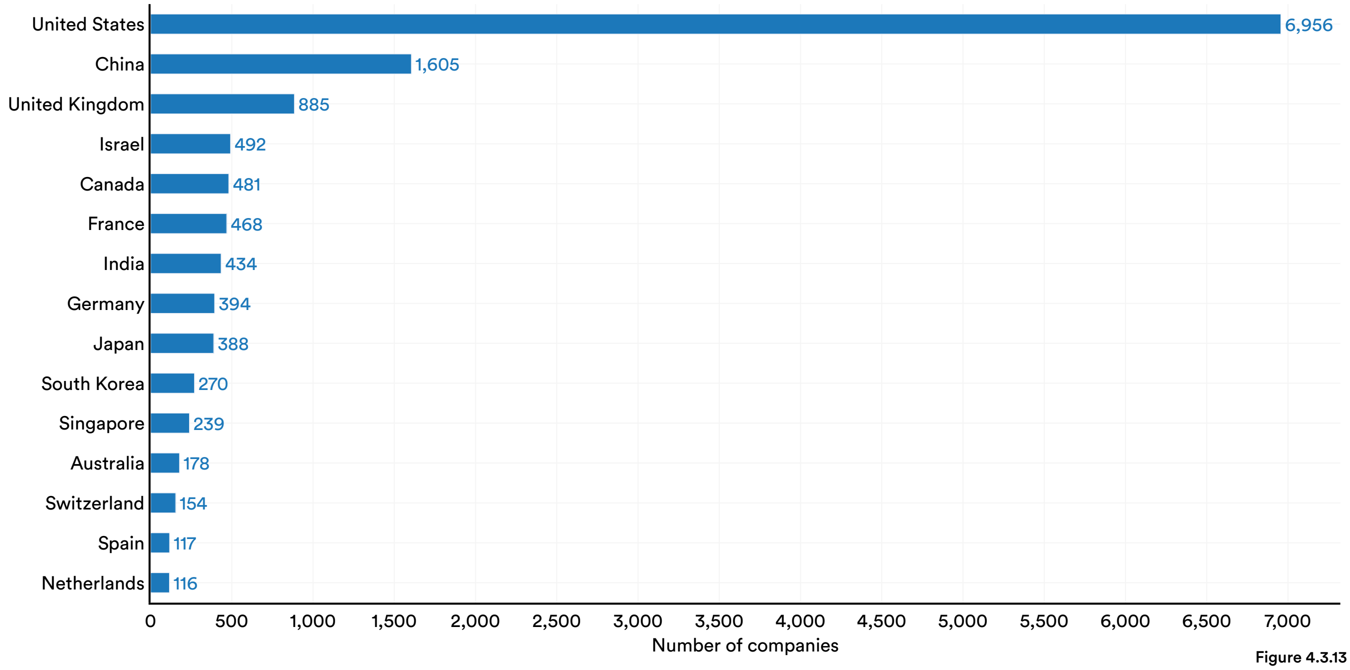



Figure 4.3.13

Figure 4.3.14 presents data on newly funded AI companies in specific geographic regions, highlighting a decade-long pattern in which the United States consistently surpasses both Europe and China. Since 2022, the United States, along with Europe, has seen significant increases in the number of new AI companies, in contrast to China, which experienced a second consecutive annual decline.

**Number of newly funded AI companies by geographic area, 2013–24**
Source: Quid, 2024 | Chart: 2025 AI Index report

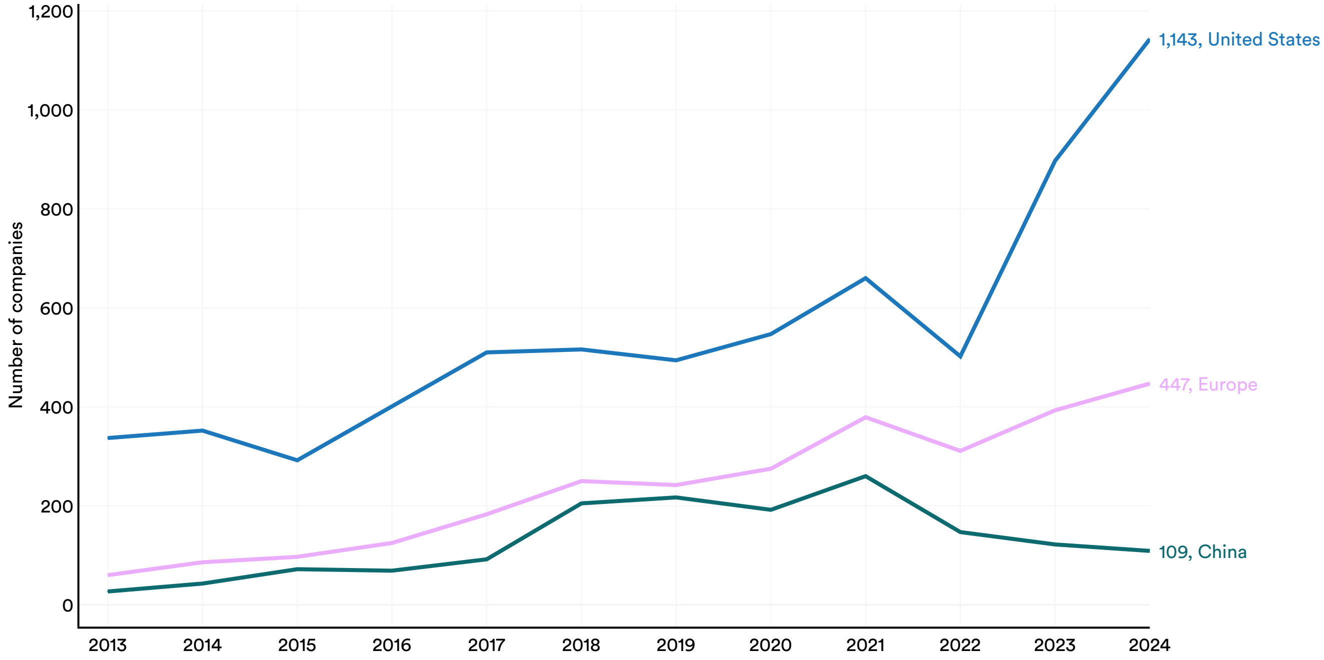



Figure 4.3.14

## Focus Area Analysis

Quid also disaggregates private AI investment by focus area. Figure 4.3.15 compares global private AI investment by focus area in 2024 versus 2023. The focus areas that attracted the most investment in 2024 were AI infrastructure/research/governance ($37.3 billion); data management and processing ($16.6 billion); and medical and healthcare ($11 billion). The prominence of AI infrastructure, research, and governance reflects large investments in companies specifically building AI applications, such as OpenAI, Anthropic, and xAI.

**Global private investment in AI by focus area, 2023 vs. 2024**
Source: Quid, 2024 | Chart: 2025 AI Index report

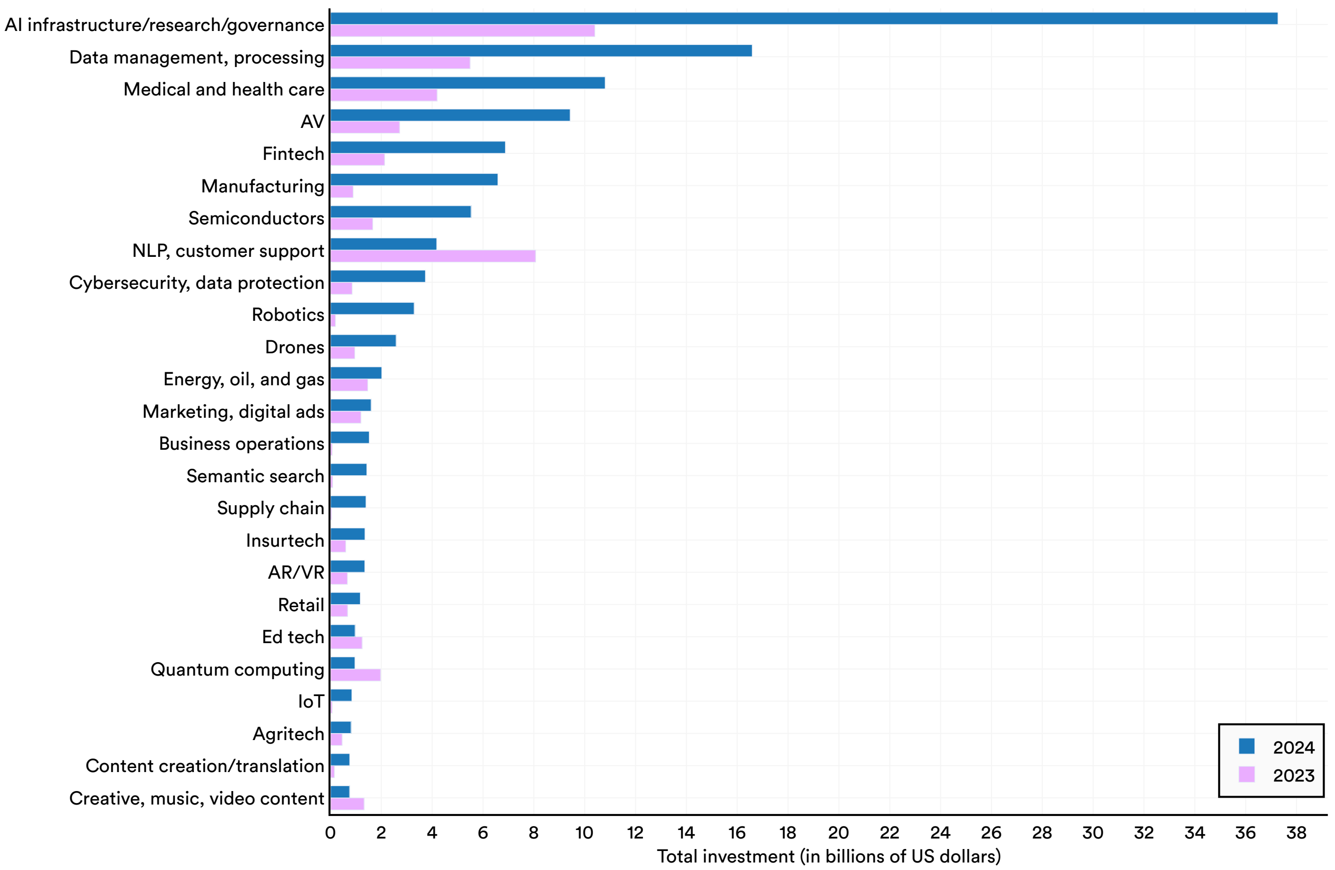



Figure 4.3.15

Figure 4.3.16 presents trends over time in AI focus area investments. As noted earlier, most focus areas saw a boost in investments in the last year. While still substantial, investment in NLP, customer support peaked in 2021 and has since then declined.

## Global private investment in AI by focus area, 2018–24

Source: Quid, 2024 | Chart: 2025 AI Index report

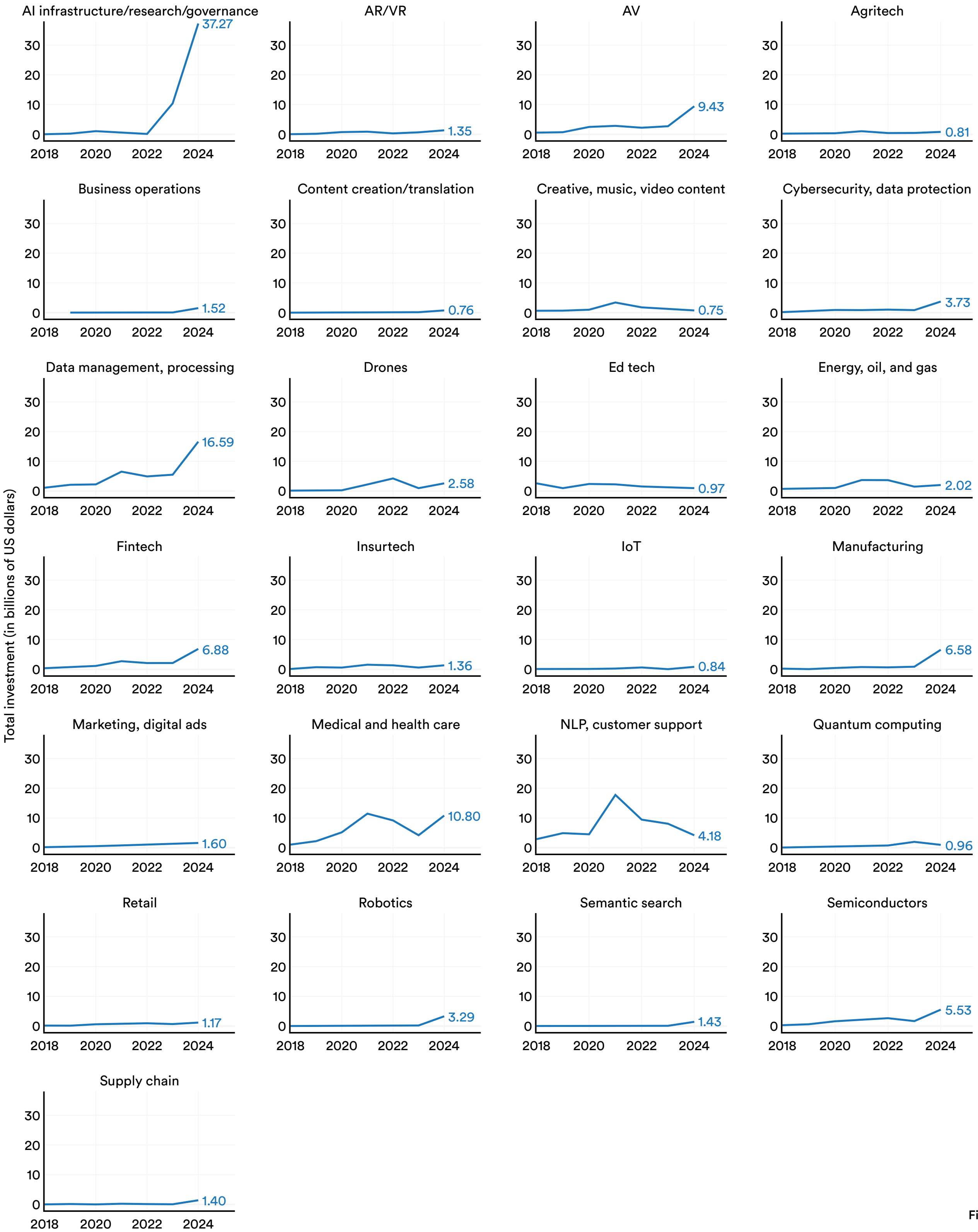



Figure 4.3.16

This section examines the practical application of AI by corporations, highlighting industry usage trends, how businesses are integrating AI, the specific AI technologies deemed most beneficial, and the impact of AI usage on financial performance.



# 4.4 Corporate Activity

## Industry Usage

This section incorporates insights from McKinsey's publications on the state of AI alongside data from prior editions. The 2024 McKinsey analysis is based on two surveys spanning 2,854 respondents across various regions, industries, company sizes, functional areas, and tenures.

### Use of AI Capabilities

Business use of AI increased significantly after stagnating between 2017 and 2023. The latest McKinsey report reveals that 78% of surveyed respondents say their organizations have begun to use AI in at least one business function, marking a significant increase from 55% in 2023 (Figure 4.4.1). Use of generative AI, which was covered for the first time in last year's survey, more than doubled year over year, with 71% of respondents in 2024 saying their organizations regularly use the technology in at least one business function, compared to 33% in 2023.

**Share of respondents who say their organization uses AI in at least one function, 2017–24**
Source: McKinsey & Company Survey, 2024 | Chart: 2025 AI Index report

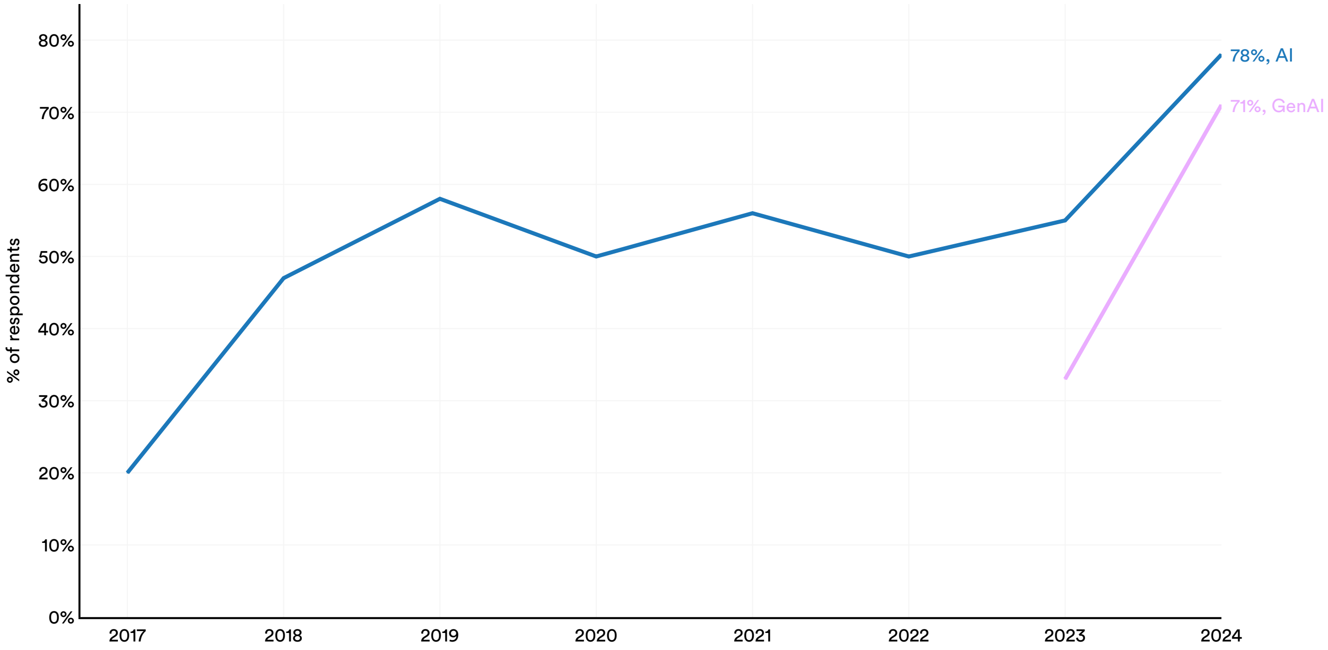



Figure 4.4.1

Figure 4.4.2 shows AI usage by industry and AI function in 2024. The greatest usage was in IT for tech (48%), followed by product and/or service development for tech (47%) and marketing and sales for tech (47%).

**AI use by industry and function, 2024**

Source: McKinsey & Company Survey, 2024 | Chart: 2025 AI Index report

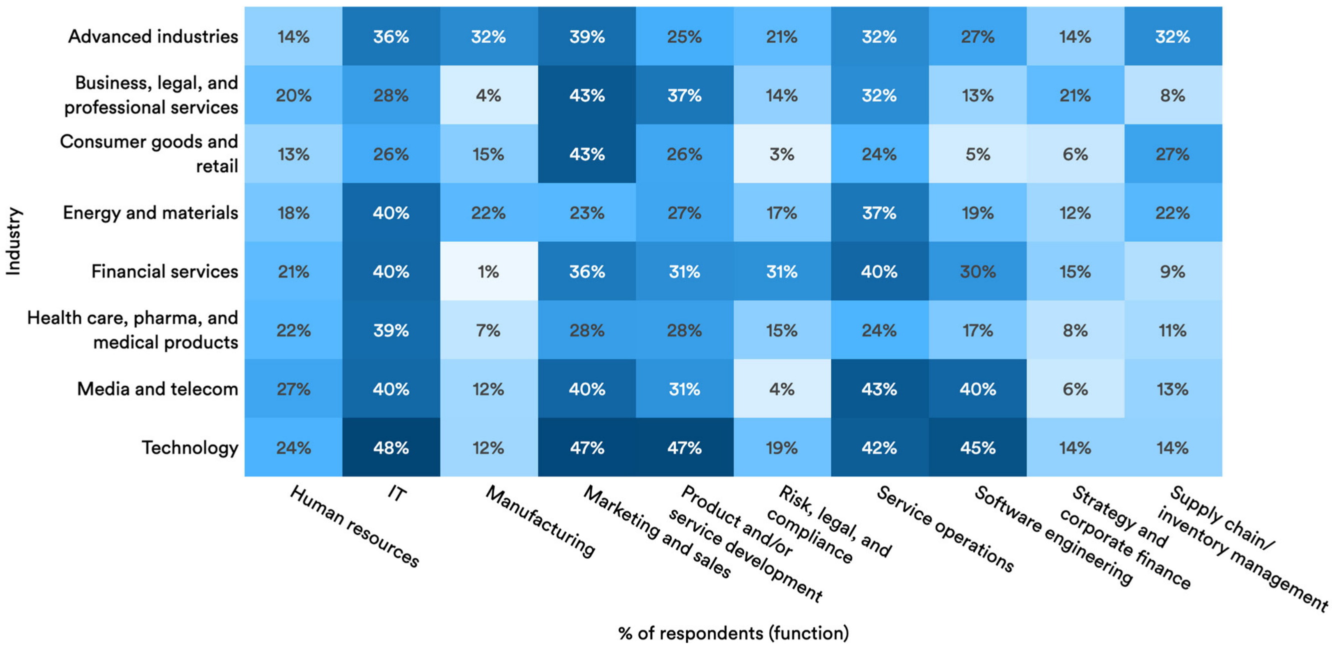



Figure 4.4.2[8]

8 “Advanced industries” comprises respondents from sectors such as advanced electronics, aerospace and defense, automotive and assembly, and semiconductors. “Energy and materials” encompasses respondents from agriculture, chemicals, electric power and natural gas, metals and mining, oil and gas, as well as paper, forest products, and packaging.

Organizations have reported both cost reductions and revenue increases where they have started using AI, but most commonly at low levels (Figure 4.4.3). The areas where respondents most frequently reported that their use of AI has resulted in cost savings were service operations (49%), supply chain and inventory management (43%), and software engineering (41%). For revenue gains, the functions that most commonly benefited from their use of AI include marketing and sales (71%), supply chain and inventory management (63%), and service operations (57%).

**Cost decrease and revenue increase from analytical AI use by function, 2024**
Source: McKinsey & Company Survey, 2024 | Chart: 2025 AI Index report

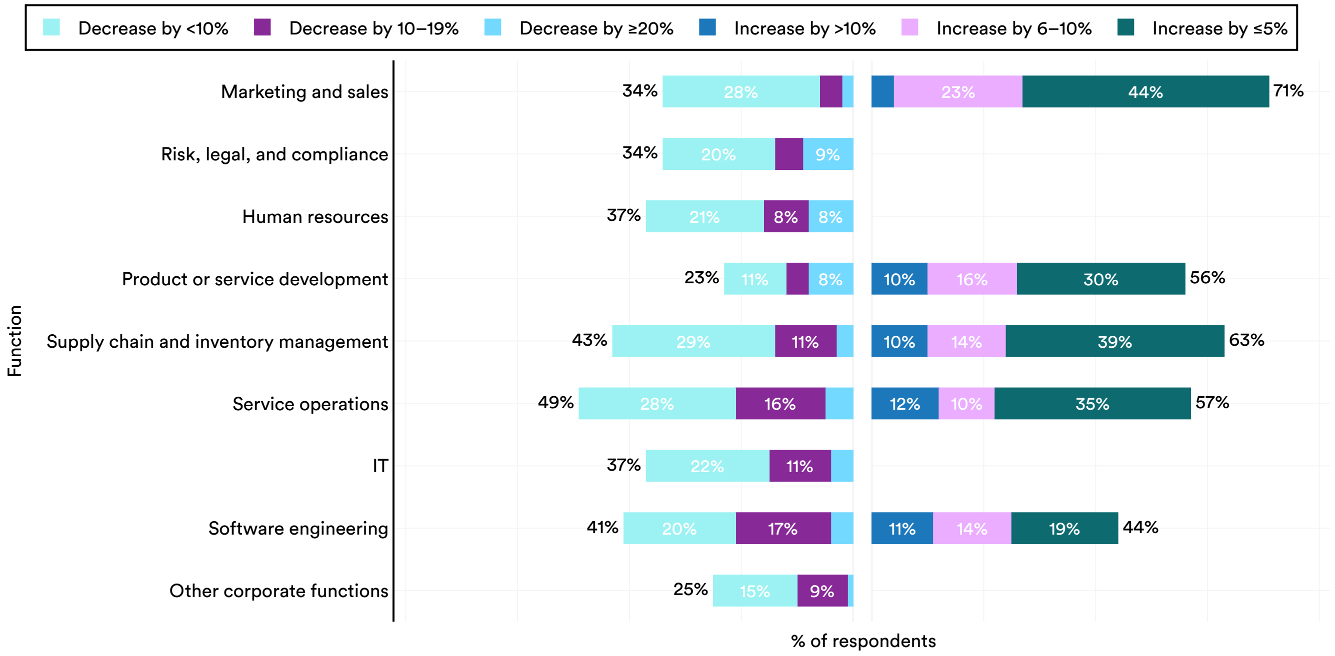



Figure 4.4.3

Figure 4.4.4 presents global AI usage by organizations, segmented by regions. In 2024, surveyed respondents in every region reported increased use of AI compared with 2023. One of the most significant year-over-year growth rates in AI use was seen in Greater China, where organizations' reported use grew by 27 percentage points. North America remains the leader in use of AI (82%), but only by a small margin. Europe also experienced a significant increase in AI usage rates, growing by 23 percentage points to 80% since 2023.

**AI use by organizations in the world, 2023 vs. 2024**
Source: McKinsey & Company Survey, 2024 | Chart: 2025 AI Index report

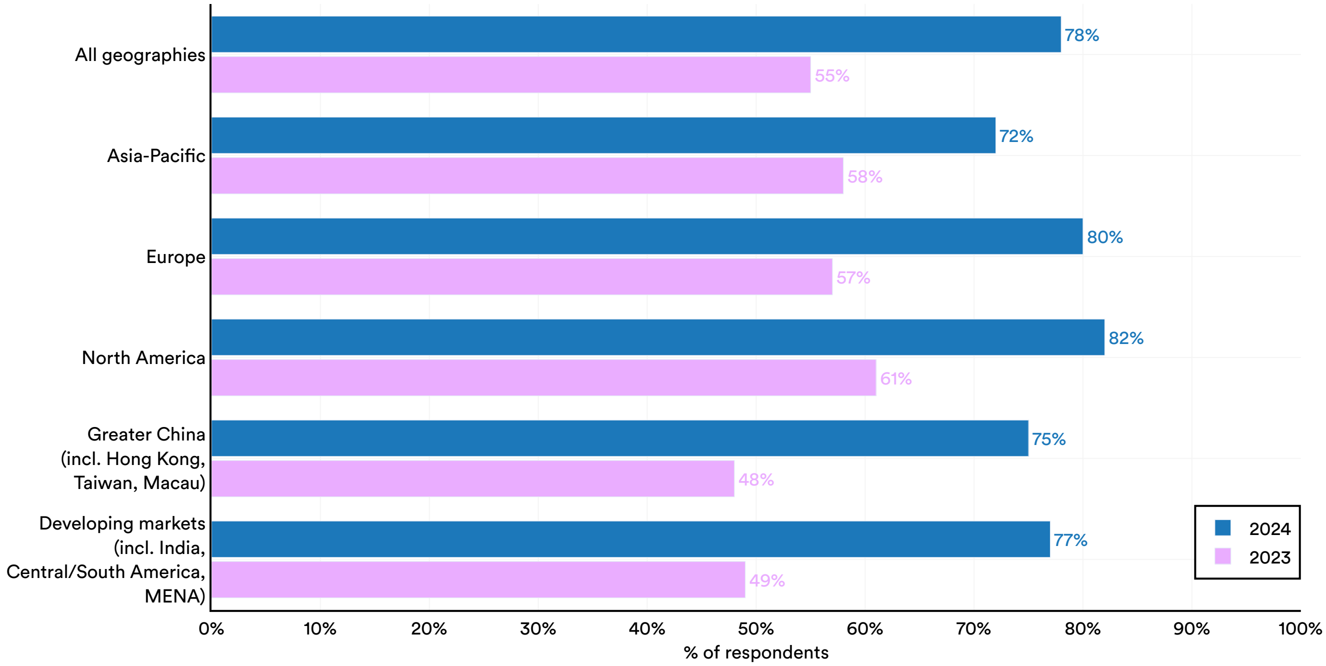



Figure 4.4.4

## Deployment of AI Capabilities

How are organizations deploying AI? Figure 4.4.5 highlights the proportion of total surveyed respondents that report using generative AI for a particular function. It is possible for respondents to indicate that they deploy AI for multiple purposes.

The most common application is marketing strategy content support (27%), followed by knowledge management (19%), personalization (19%), and design development (14%). Most of the leading reported use cases are within the marketing and sales function. A complementary survey of C-suite executives in developed markets found that only 1% described their generative AI rollouts as "mature." Overall, most companies are still in the early stages of capturing value at scale from AI.

**Most common generative AI use cases by function, 2024**

Source: McKinsey & Company Survey, 2024 | Chart: 2025 AI Index report

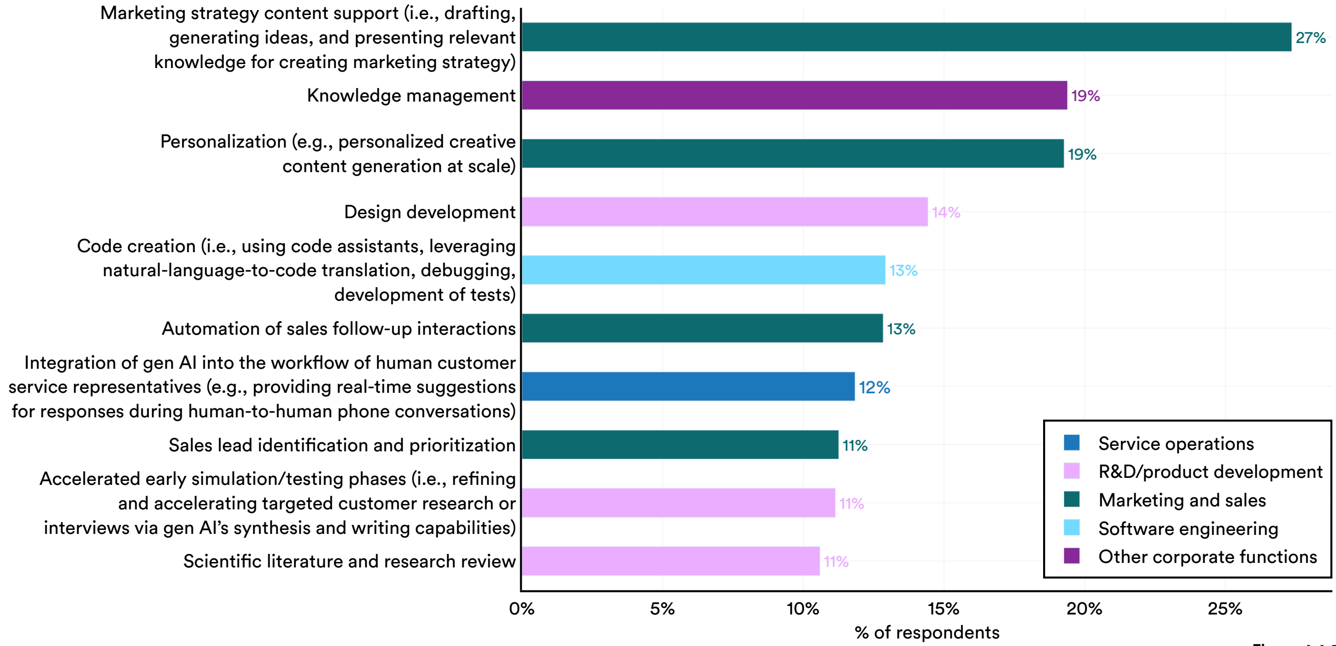



Figure 4.4.5

Figure 4.4.6 examines the proportion of respondents that report cost decreases and revenue increases from their organizations' use of generative AI in each business function. Overall, respondents report both cost reductions and revenue increases across various functions as a result of using generative AI, most commonly at low levels. The areas where respondents most frequently reported cost savings were supply chain and inventory management (61%), service operations (58%), and both human resources and strategy and corporate finance (56%). For revenue gains, the functions most commonly reporting benefits from generative AI include strategy and corporate finance (70%), supply chain and inventory management (67%), and marketing and sales (66%).

**Cost decrease and revenue increase from generative AI use by function, 2024**
Source: McKinsey & Company Survey, 2024 | Chart: 2025 AI Index report

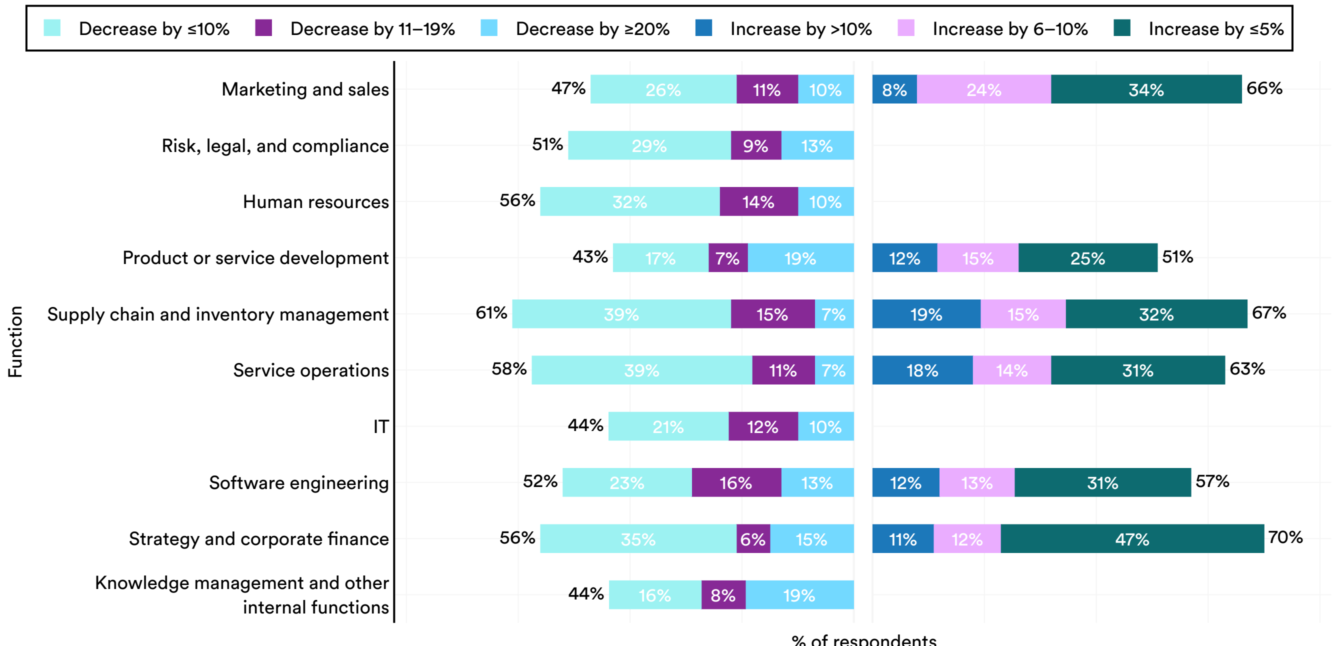



Figure 4.4.6

Figure 4.4.7 depicts the variation in generative AI usage among businesses across different regions of the world. Across all regions, reported use of generative AI in at least one business function reached 71% in 2024, more than doubling from 33% in 2023. This amount is just 7 percentage points lower than the percentage who reported using any form of AI (78%), which is shown in Figure 4.4.1. The use gap between AI overall and generative AI has contracted sharply from 22 percentage points in 2023 to 7 percentage points in 2024, signaling an accelerated usage of generative AI capabilities. North America (74%), Europe (73%), and Greater China (73%) lead in organizations' use of generative AI.

**Generative AI use by organizations in the world, 2023 vs. 2024**

Source: McKinsey & Company Survey, 2024 | Chart: 2025 AI Index report

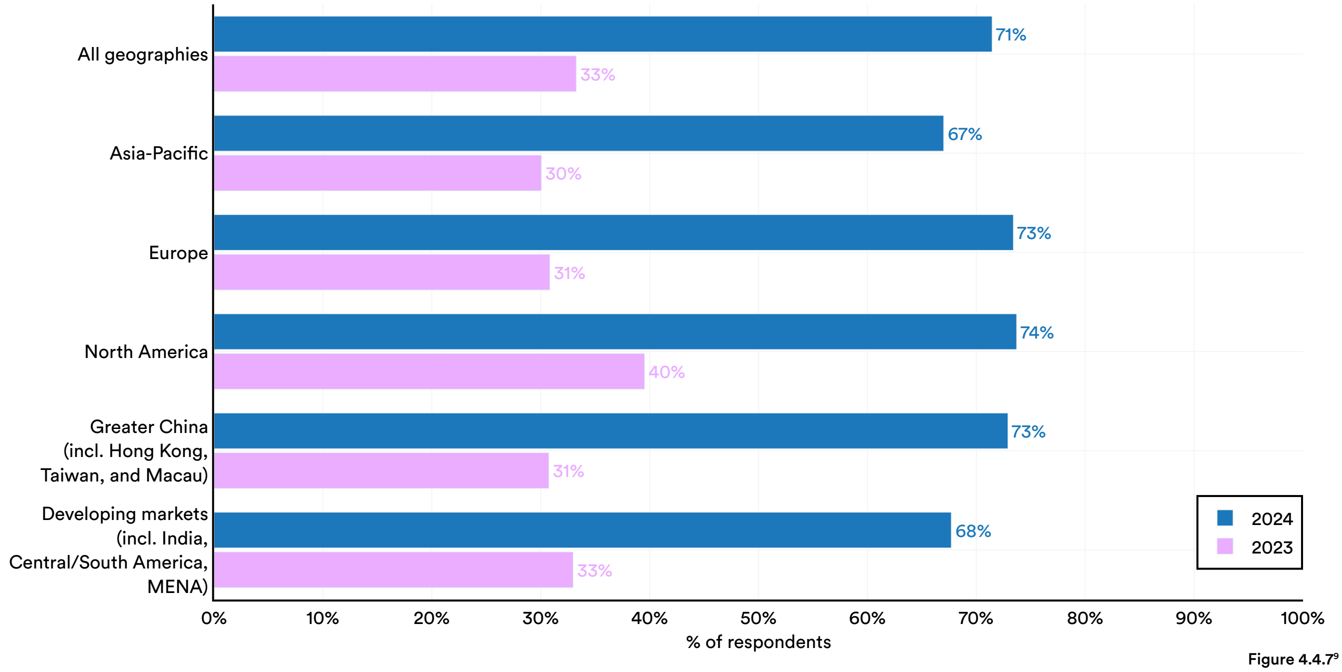



Figure 4.4.7[9]

9 This figure highlights AI use in at least one business function.

# AI's Labor Impact

Over the last six years, the growing integration of AI into the economy has sparked intense interest in its productivity potential. While early adoption showed promise, quantifying AI's impact remained challenging until 2023, when the first wave of rigorous studies emerged. In 2024, a substantial body of empirical research established clear patterns of AI's workplace effects across multiple domains and contexts. This section analyzes productivity impact data from five major academic studies, which together represent the first large-scale empirical investigation of AI's workplace effects. The research, encompassing over 200,000 professionals across multiple industries and contexts, reveals consistent productivity gains ranging from 10% to 45%, with particularly strong effects in technical, customer support, and creative tasks. These studies employed diverse methodologies, including natural experiments, randomized controlled trials, and large-scale surveys, to measure AI's impact across different organizational contexts.

## Productivity Trends

One of the most reputable studies on AI's impact on productivity, particularly generative AI, was published by Erik Brynjolfsson, Danielle Li, and Daniel Rock in April 2023.[10] Analyzing data from 5,179 customer support agents, the study examined the staggered introduction of a generative AI-powered conversational assistant. The researchers found that AI adoption increased the number of issues resolved per hour by 14.2% (Figure 4.4.8). Moreover, the study uncovered that productivity gains emerged quickly after AI was introduced, and AI-exposed workers maintained higher efficiency even during AI outages.

Other recently released research has confirmed the Brynjolfsson finding. A Microsoft workplace study established baseline productivity improvements in common workplace tasks, with document editing increasing by 10–13% and email processing time decreasing by 11%. Specialized roles showed higher gains. For example, security professionals achieved 23% faster completion times with 7% higher accuracy, and sales teams demonstrated 39% faster response times with 25% higher accuracy. In scientific research, Aiden Toner-Rodgers' study of 1,018 scientists found that those who used AI, compared to those who did not, experienced a 44.1% increase in materials discovery rates, a 39.4% increase in patent filings, and a 17.2% increase in product prototypes (Figure 4.4.9).

**Impact of AI on customer support agents**
Source: Brynjolfsson et al., 2023 | Chart: 2024 AI Index report

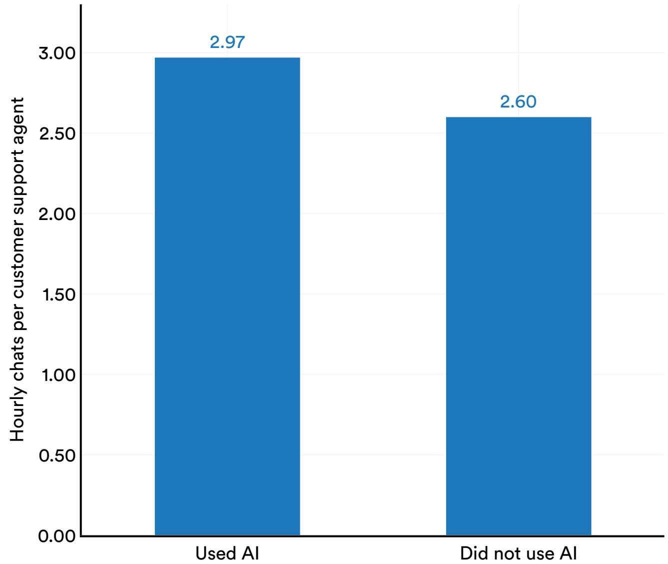



Figure 4.4.8

**Impact of AI on scientific innovation**
Source: Toner-Rodgers et al., 2025 | Chart: 2025 AI Index report

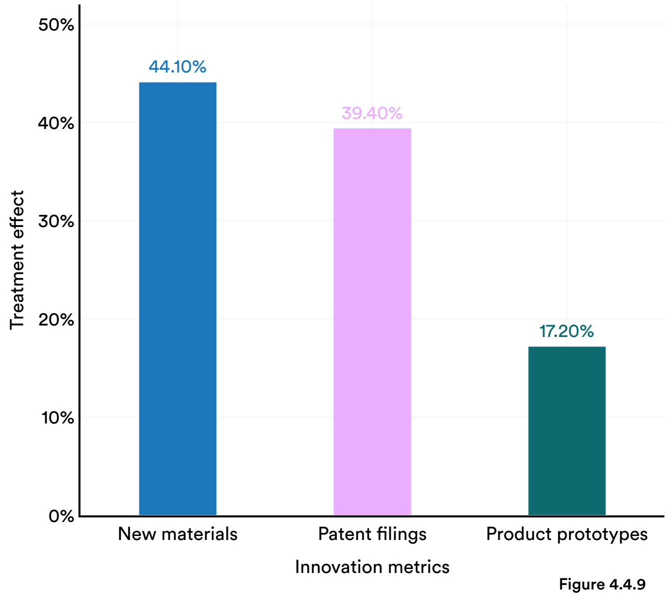



Figure 4.4.9

10 The paper was published as NBER working paper 31161 in 2023 and then in the "Quarterly Journal of Economics" in 2025.

In the software development domain, two major studies provided complementary evidence of AI's impact. A field experiment with 4,867 developers found that AI assistance increased task completion by 26.08% on average. This finding was reinforced by another natural experiment with 187,489 developers; it documented a 12.4% increase in core coding activities alongside a 24.9% decrease in time spent on project management tasks.

### Equalizing Effect

A consistent pattern across studies is AI's equalizing effect on workplace performance (Figure 4.4.10). In software development contexts, new research has found that junior developers experienced productivity increases of 21–40%, while senior developers saw more modest gains of 7–16%. This pattern was independently confirmed by other studies, which found coding productivity increases of 14–27% for low-ability workers compared to 5–10% for high-ability workers. Moreover, their analysis showed AI increased exploration of new technologies by 21.8% and generated an average potential salary increase of $1,683 per developer annually, suggesting AI tools are not just boosting productivity but actively enabling skill development. This research supports earlier 2023 and 2024 studies showing that AI-driven productivity gains vary based on workers' initial skill levels.

However, some research suggests that AI's impact may work in the opposite direction. A study by Toner-Rodgers found that while top-performing scientists nearly doubled their output, the bottom third saw little benefit from AI's introduction. The study further highlighted that the key factor influencing AI's impact was not prior achievement but the ability to effectively evaluate AI-generated recommendations. This suggests that AI tools function as powerful amplifiers for those who can leverage them effectively, regardless of experience level. Understanding how AI affects different workers across various tasks will be a crucial focus of ongoing research.

**AI's productivity equalizing effects**

| Study | Task | Low-skill worker productivity gain | High-skill worker productivity gain |
|---|---|---|---|
| Brynjolfsson et al., 2023 | Customer support | 34% | Indistinguishable from zero |
| Dell'Acqua et al., 2023 | Consulting | 42.96% | 16.5% |
| Cui et al., 2024 | Software engineering | 21–40% | 7–16% |
| Hoffman et al., 2024 | Software engineering | 12–27% | 5–10% |

Figure 4.4.10

### Adoption and Integration

The research reveals that productivity gains are strongly correlated with comprehensive AI integration and systematic implementation. A survey conducted by Romanian researchers of 233 employees found that organizations with high AI integration showed a 72% probability of significant productivity improvements, compared to just 3.4% for those with minimal integration. Their analysis documented a clear spectrum of productivity improvements across the entire study sample, with 46.8% of respondents reporting gains of 0–20%, 26.2% seeing gains of 20–40%, and 18.4% achieving improvements of 40–60%. A smaller proportion saw even larger gains, with 7.7% reporting increases of 60–80% and 0.9% achieving improvements of 80–100% (Figure 4.4.11).

**Distribution of productivity gains from AI use**

Source: Necula et al., 2024 | Chart: 2025 AI Index report

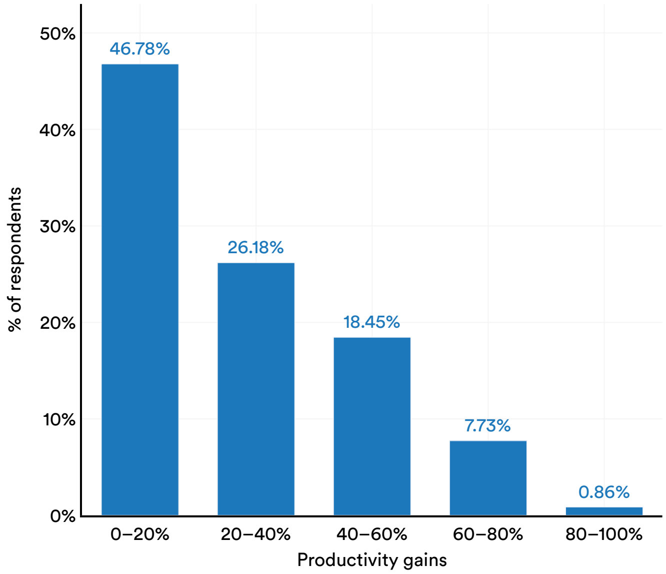



Figure 4.4.11

### Workforce Impact

The introduction of AI tools has led to significant shifts in both task allocation and team structures. The Microsoft workplace study found that AI automation enabled a 45% reduction in perceived mental demand (measured as 30/100 vs. 55/100 on their cognitive load scale), closed 84.6% of the accuracy gap for nonnative English speakers, and led to 49% more key information being included in professional reports. These improvements were particularly pronounced among "power users" (users who are intimately familiar with AI, as defined by using it at least several times a week) with 29% of AI users in this category saving more than 30 minutes per day. Research from the Harvard Business School documented that AI adoption led to reduced collaborative overhead, with projects requiring 79.3% fewer collaborators (team members) on average.

These changes are reshaping professional roles in fundamental ways. Toner-Rodgers' study observed a dramatic shift in how scientists spend their time, with idea generation decreasing from 39% to 16% of work hours while judgment tasks increased from 23% to 40%. Debates about AI, like those surrounding past technological advancements, often center on automation versus augmentation—whether AI will replace jobs or enhance human work. While concrete data on AI-driven workforce changes remains limited, research is shedding light on how people perceive its impact on employment.

The Romanian survey data suggests varied expectations for AI's impact on workforce size, with 43% of organizations anticipating decreases, 30% expecting little change, 15% projecting increases, and 12% remaining uncertain about long-term implications. A McKinsey survey of executives found that 31% expect AI to reduce workforce size, while only 19% foresee an increase (Figure 4.4.12). In spite of claims about the increase in productivity of software engineers due to generative AI, the survey shows that their number is expected to increase, consistent with the Jevons Paradox. Notably, the share predicting workforce reductions has declined from last year, suggesting business leaders are becoming less convinced that AI will shrink organizational workforces (Figure 4.4.13).

**Expectations about the impact of generative AI on organizations' workforces in the next 3 years, 2024**
Source: McKinsey & Company Survey, 2024 | Chart: 2025 AI Index report

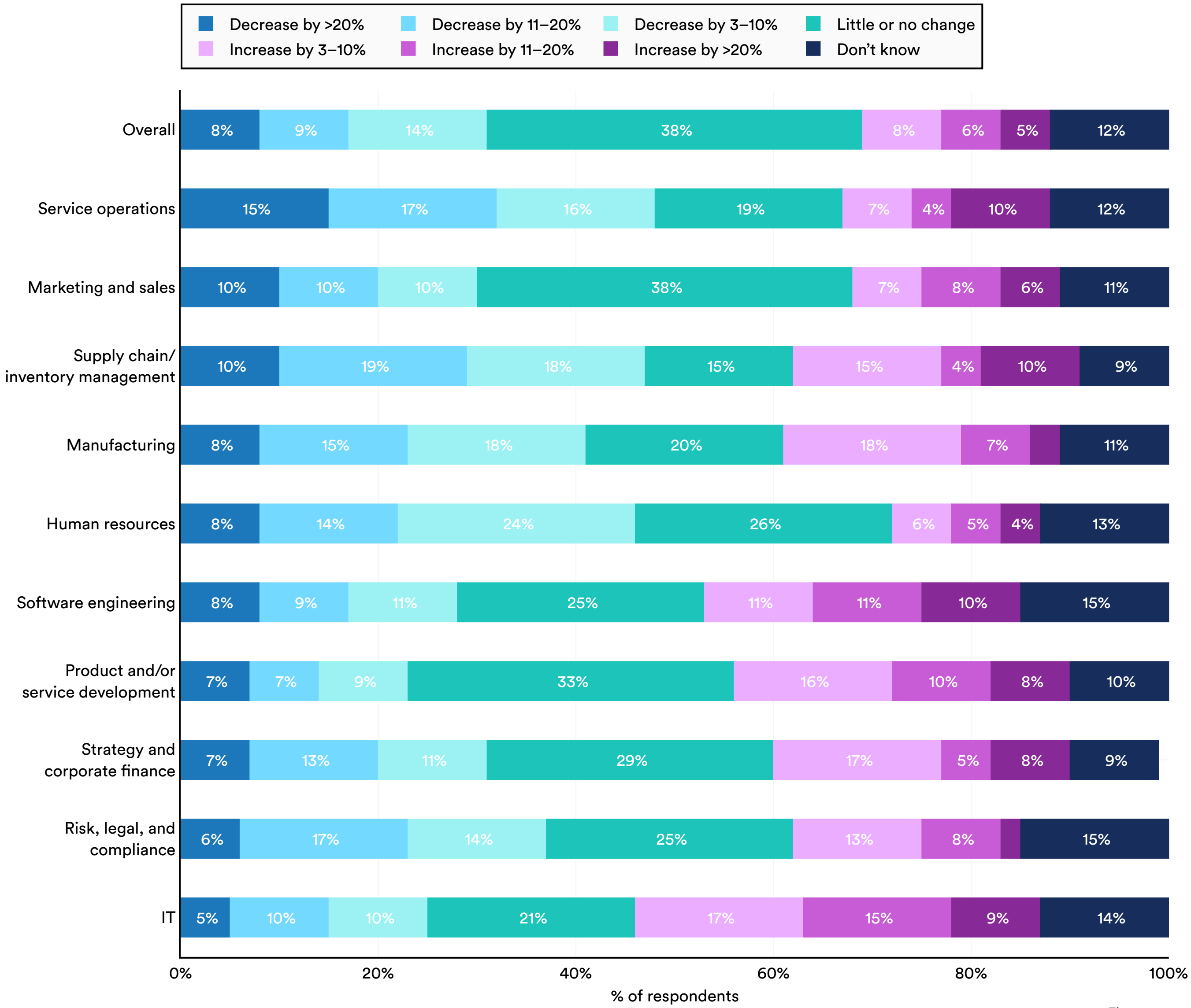



Figure 4.4.12

### Expectations about the impact of AI on organizations' workforces in the next 3 years, 2023 vs. 2024

Source: McKinsey & Company Survey, 2023–24 | Chart: 2025 AI Index report

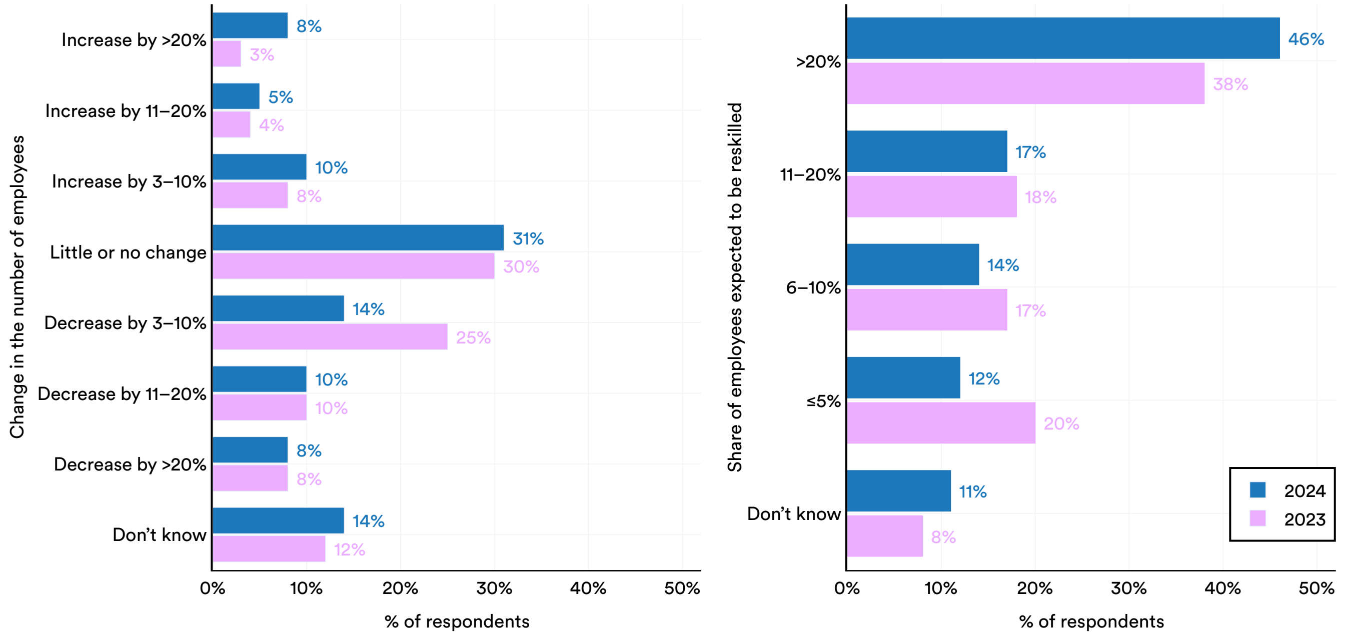



Figure 4.4.13

The deployment of robots equipped with AI-based software technologies offers a window into the real-world application of AI-ready infrastructure. This section draws on data from the International Federation of Robotics (IFR), a nonprofit organization dedicated to advancing the robotics industry. Annually, the IFR publishes the World Robotics Reports, which track global robot installation trends.[11]

# 4.5 Robot Deployments

## Aggregate Trends

The following section includes data on the installation and operation of industrial robots, which are defined as an “automatically controlled, reprogrammable, multipurpose manipulator, programmable in three or more axes, which can be either fixed in place or mobile for use in industrial automation applications.”

Figure 4.5.1 reports the total number of industrial robots installed worldwide by year. In 2023, industrial robot installations decreased slightly, with 541,000 units marking a 2.2% decrease from 2022. This reflects the first year-over-year decrease since 2019.

**Number of industrial robots installed in the world, 2012–23**

Source: International Federation of Robotics (IFR), 2024 | Chart: 2025 AI Index report

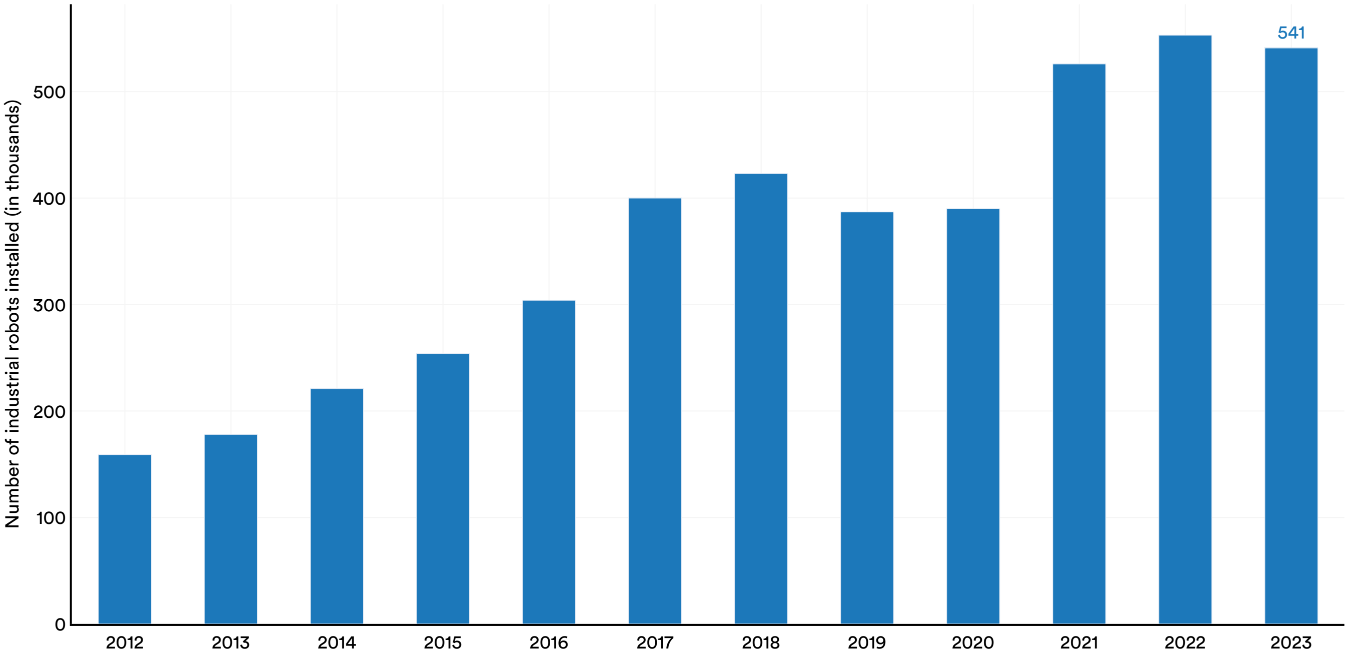



Figure 4.5.1

11 Due to the timing of the IFR report, the most recent data is from 2023. Every year, the IFR revisits data collected for previous years and will occasionally update the data if more accurate figures become available. Therefore, some of the data reported in this year’s report might differ slightly from data reported in previous years.

The global operational stock of industrial robots reached 4,282,000 in 2023, up from 3,904,000 in 2022 (Figure 4.5.2). Since 2012, both the installation and utilization of industrial robots have steadily increased.

**Operational stock of industrial robots in the world, 2012–23**

Source: International Federation of Robotics (IFR), 2024 | Chart: 2025 AI Index report

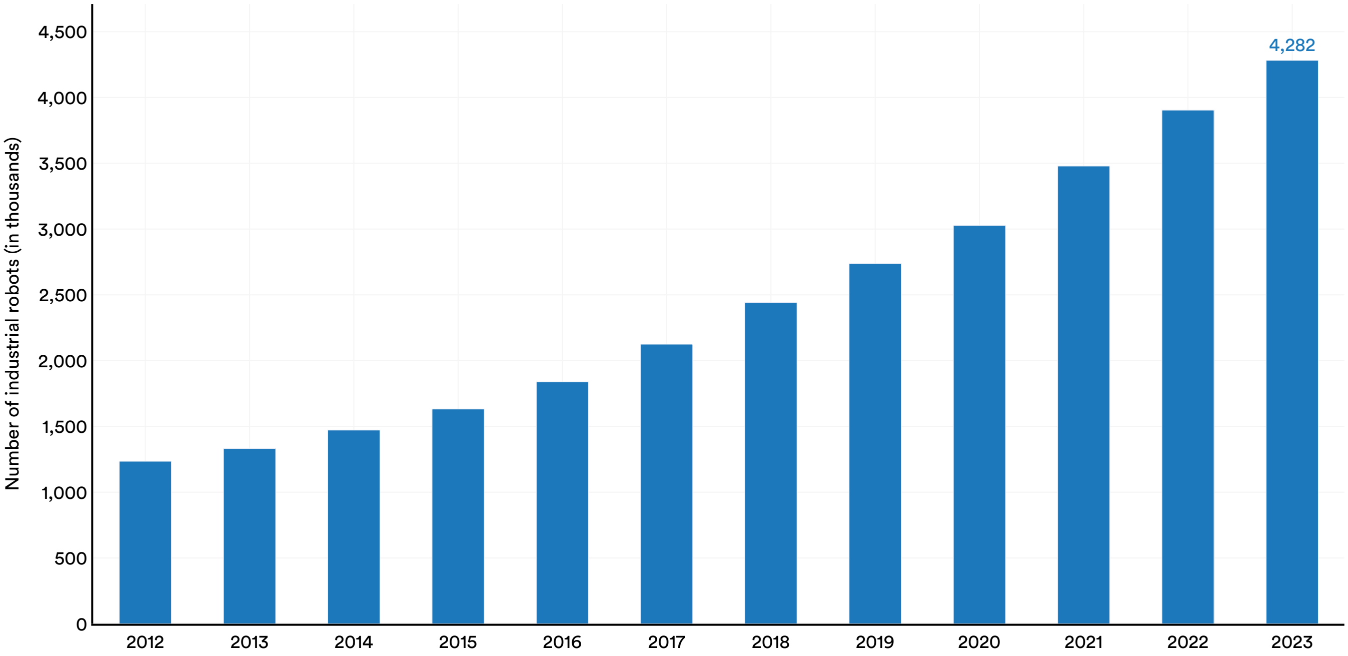



Figure 4.5.2

## Industrial Robots: Traditional vs. Collaborative Robots

There is a distinction between traditional robots, which operate in place of humans, and collaborative robots, designed to work alongside them.[12] The robotics community is increasingly enthusiastic about collaborative robots due to their safety, flexibility, scalability, and ability to learn iteratively.

Figure 4.5.3 reports the number of industrial robots installed in the world by type. In 2017, collaborative robots accounted for just 2.8% of all new industrial robot installations. By 2023, the number rose to 10.5%.

**Number of industrial robots installed in the world by type, 2017–23**

Source: International Federation of Robotics (IFR), 2024 | Chart: 2025 AI Index report

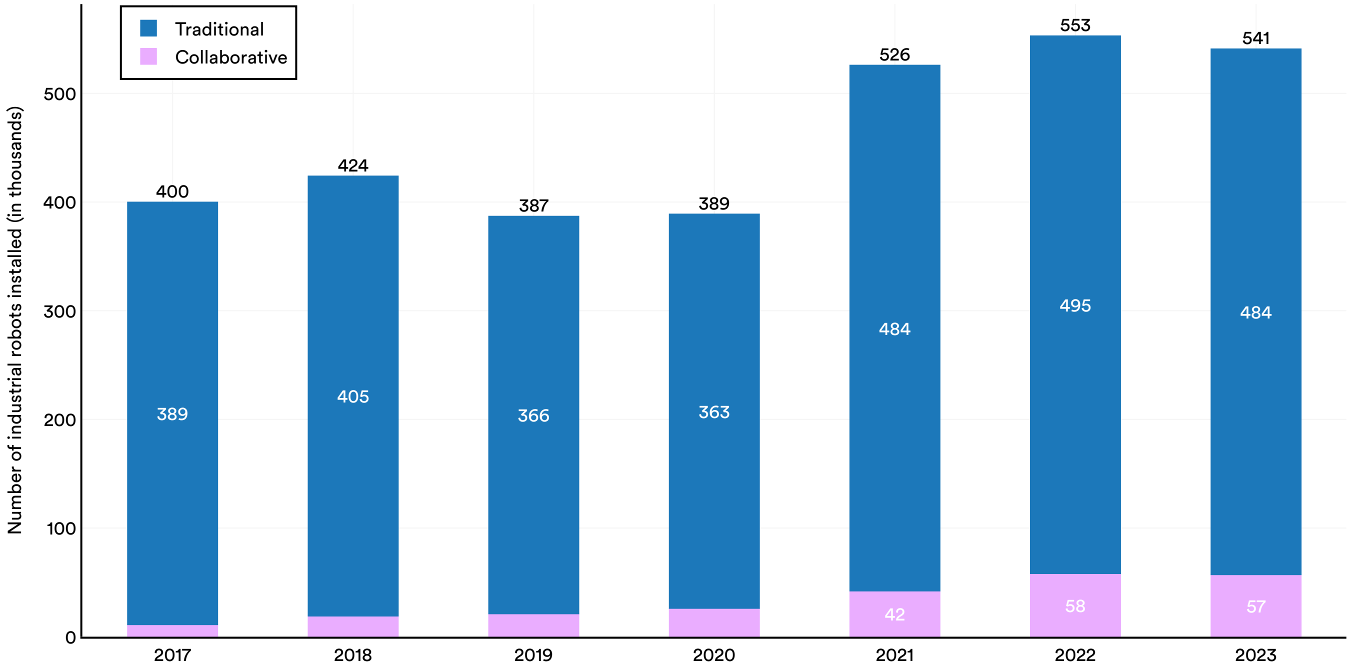



Figure 4.5.3

12 More detail on how the IFR defines collaborative robots can be found here.

## By Geographic Area

Country-level data on robot installations can suggest which nations prioritize the integration of robots into their economies. In 2023, China led the world with 276,300 industrial robot installations, six times more than Japan's 46,100 and 7.3 times more than the United States' 37,600 (Figure 4.5.4). South Korea and Germany followed with 31,400 and 28,400 installations, respectively.

**Number of industrial robots installed by geographic area, 2023**
Source: International Federation of Robotics (IFR), 2024 | Chart: 2025 AI Index report

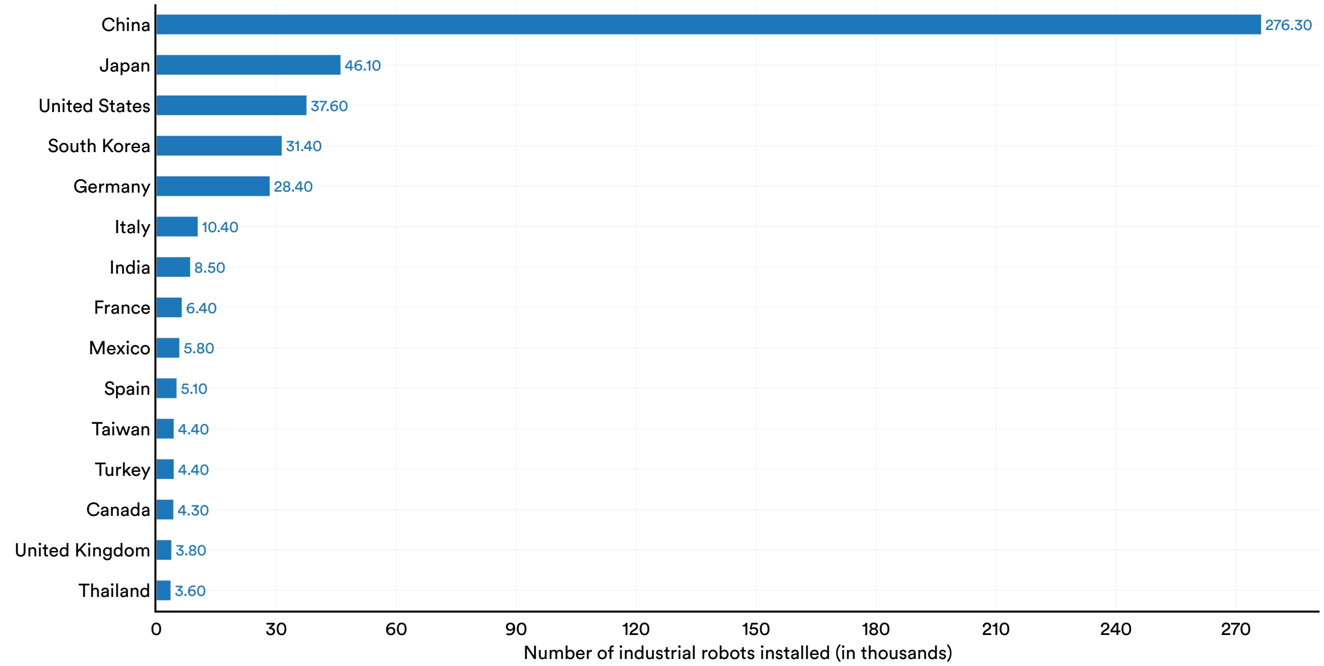



Figure 4.5.4

Since surpassing Japan in 2013 as the leading installer of industrial robots, China has significantly widened the gap with the nearest country. In 2013, China's installations accounted for 20.8% of the global total, reaching 51.1% by 2023 (Figure 4.5.5).

**Number of new industrial robots installed in top 5 countries, 2011–23**
Source: International Federation of Robotics (IFR), 2024 | Chart: 2025 AI Index report

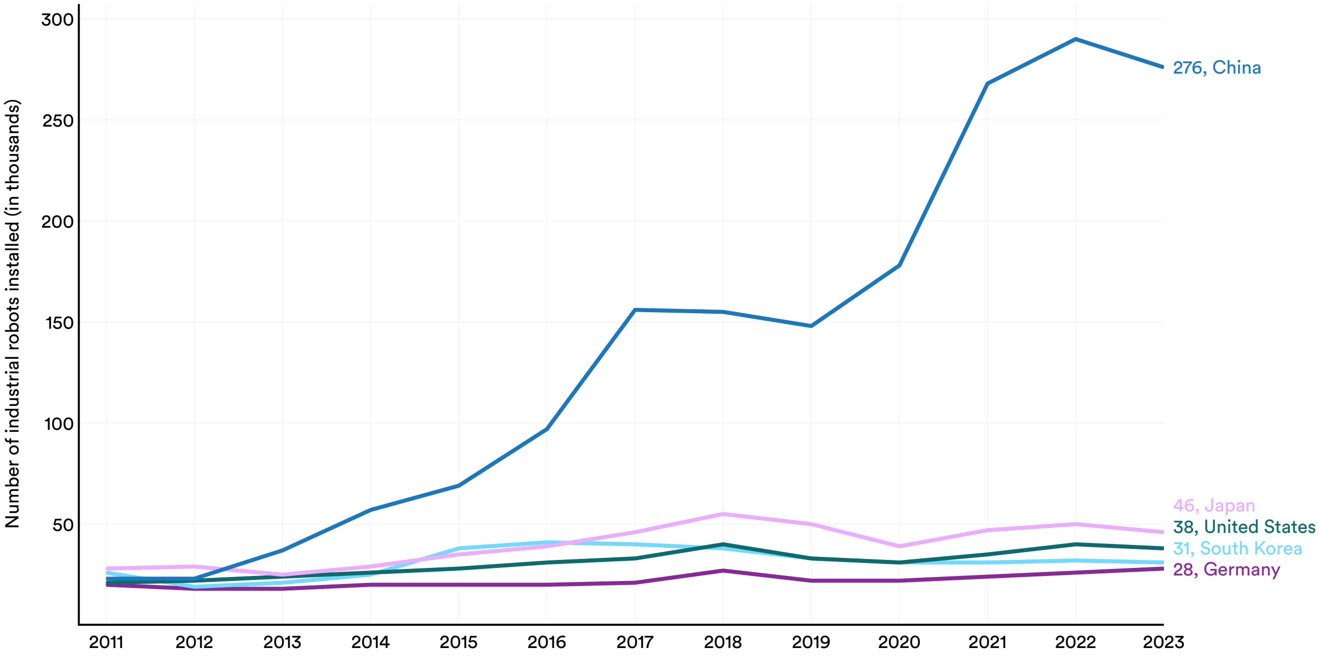



Figure 4.5.5

Since 2021, China has installed more industrial robots than the rest of the world combined, but the margin decreased in 2023 compared to 2022 (Figure 4.5.6). Despite this year-over-year decline, the sustained trend underscores China's dominance in industrial robot installations.

**Number of industrial robots installed (China vs. rest of the world), 2016–23**
Source: International Federation of Robotics (IFR), 2024 | Chart: 2025 AI Index report

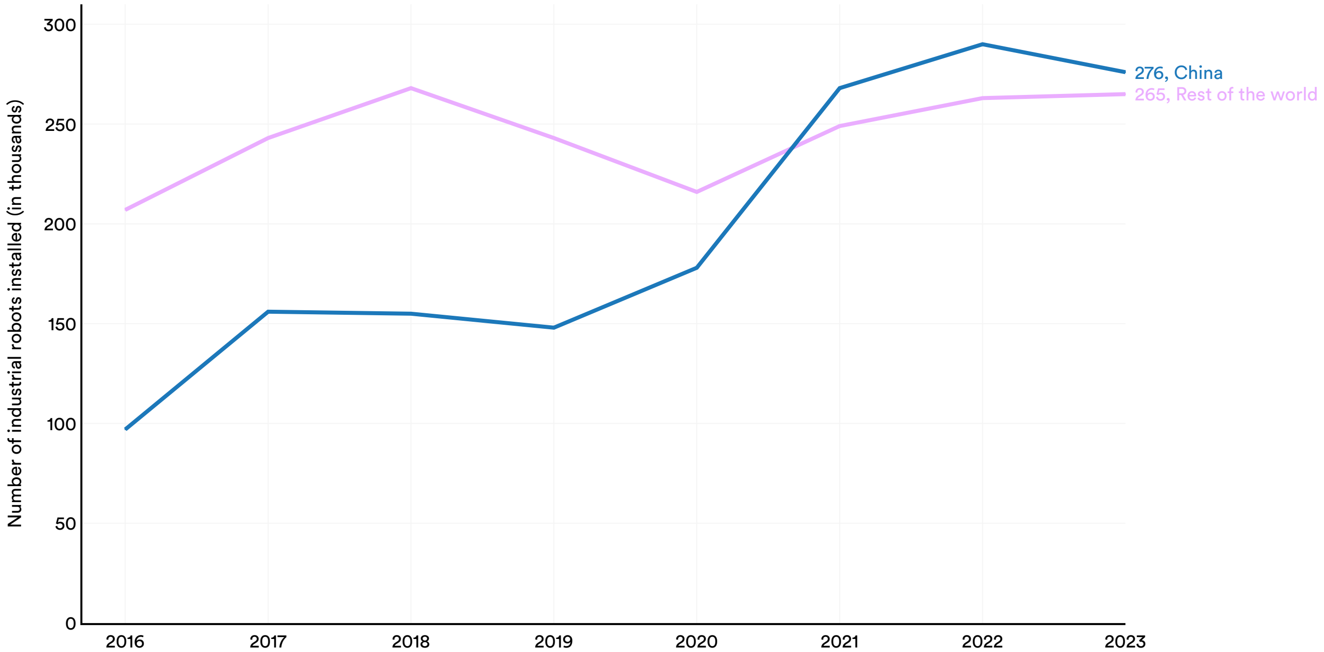



Figure 4.5.6

According to the IFR report, seven countries reported an annual increase in industrial robot installations from 2022 to 2023 (Figure 4.5.7). The countries with the highest growth rates include India (59%), the United Kingdom (51%), and Canada (37%). The geographic areas with the steepest declines include Taiwan (-43%), France (-13%), and Japan and Italy (both -9%).

**Annual growth rate of industrial robots installed by geographic area, 2022 vs. 2023**
Source: International Federation of Robotics (IFR), 2024 | Chart: 2025 AI Index report

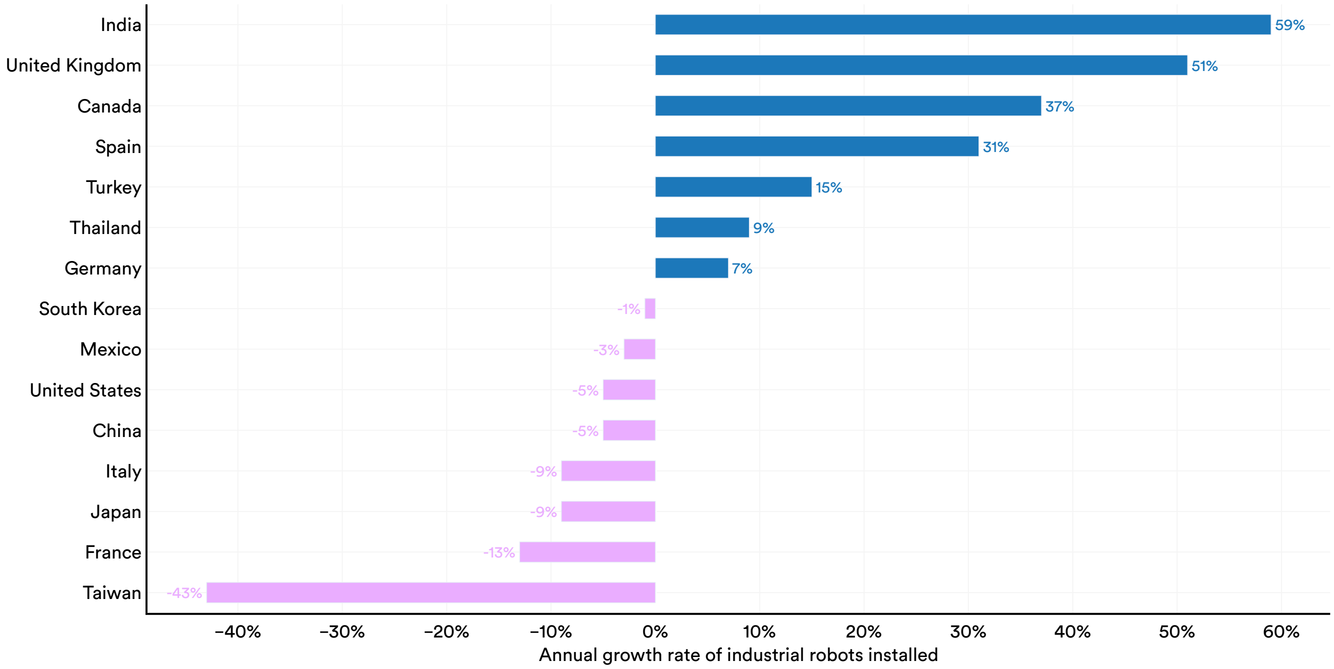



Figure 4.5.7

## Country-Level Data on Service Robotics

Another important class of robots is service robots, which the International Organization for Standardization defines as a robot "that performs useful tasks for humans or equipment excluding industrial automation applications."[13] Such robots can, for example, be used in medical settings and for professional cleaning. In 2023, more service robots were installed for every application category than in 2022, with the exception of medical robots (Figure 4.5.8). More specifically, the number of service robots installed in agricultural and hospitality settings increased 2.5 and 2.2 times, respectively.

**Number of service robots installed in the world by application area, 2022 vs. 2023**

Source: International Federation of Robotics (IFR), 2024 | Chart: 2025 AI Index report

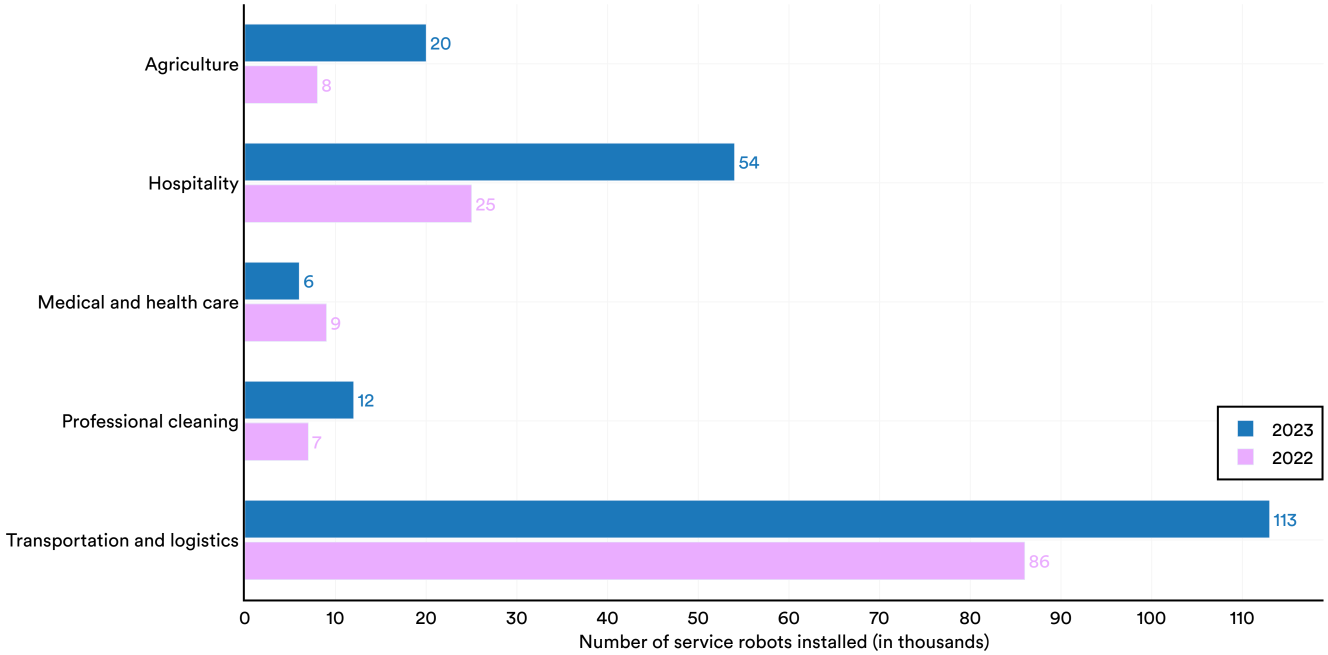



Figure 4.5.8

13 A more detailed definition can be accessed here.

# Appendix

## International Federation of Robotics (IFR)

Data presented in the Robot Installations section was sourced from the World Robotics 2024 report.

## Lightcast

*Prepared by Vishy Kamalapuram and Elena Magrini*

Lightcast delivers job market analytics that empower employers, workers, and educators to make data-driven decisions. The company's artificial intelligence technology analyzes hundreds of millions of job postings and real-life career transitions to provide insight into labor market patterns. This real-time strategic intelligence offers crucial insights, such as what jobs are most in demand, the specific skills employers need, and the career directions that offer the highest potential for workers. For more information, visit https://lightcast.io.

### Job Postings Data

To support these analyses, Lightcast mined its dataset of millions of job postings collected since 2010. Lightcast collects postings from over 51,000 online job sites to develop a comprehensive, real-time portrait of labor market demand. It aggregates job postings, removes duplicates, and extracts data from job postings text. This includes information on job title, employer, industry, and region, as well as required experience, education, and skills.

Job postings are useful for understanding trends in the labor market because they allow for a detailed, real-time look at the skills employers seek. To assess the representativeness of job postings data, Lightcast conducts a number of analyses to compare the distribution of job postings to the distribution of official government and other third-party sources in the United States. The primary source of government data on U.S. job postings is the Job Openings and Labor Turnover Survey (JOLTS) program, conducted by the Bureau of Labor Statistics. Based on comparisons between JOLTS and Lightcast, the labor market demand captured by Lightcast data represents over 99% of the total labor demand. Jobs not posted online are usually in small businesses (e.g., "Help Wanted" signs in restaurant windows) and union hiring halls.

### Measuring Demand for AI

To measure the demand by employers of AI skills, Lightcast uses its skills taxonomy of over 33,000 skills.[1] These skills are organized hierarchically in over 400 skills clusters and 32 skills categories. The list of AI skills from Lightcast are shown below, with associated skills clusters. For the purposes of this report, all skills below were considered AI skills. A posting was considered an AI job if it mentioned any of these skills in the text of the listing.

**AI ethics, governance, and regulation:** ethical AI, data sovereignty, AI security, artificial intelligence risk.

**Artificial intelligence:** agentic systems, AI/ML inference, AIOps (artificial intelligence for IT operations), AI personalization, AI testing, applications of artificial intelligence, artificial general intelligence, artificial intelligence, artificial intelligence development, Artificial Intelligence Markup Language (AIML), artificial intelligence systems, automated data cleaning, Azure Cognitive Services, Baidu, cognitive automation, cognitive computing, computational intelligence, Cortana, Data Version Control (DVC), Edge Intelligence, embedded AI, expert systems, explainable AI (XAI), intelligent control, intelligent systems, interactive kiosk, IPSoft Amelia, knowledge distillation, knowledge engineering, knowledge-based configuration, knowledge-based systems, knowledge representation, multi-agent systems, neuro-symbolic AI,

1 https://lightcast.io/open-skills

Open Neural Network Exchange (ONNX), OpenAI Gym, operationalizing AI, PineCone, Qdrant, reasoning systems, swarm intelligence, synthetic data generation, Watson Conversation, Watson Studio, Weka Weaviate.

**Autonomous driving:** advanced driver-assistance systems, autonomous cruise control systems, autonomous system, autonomous vehicles, dynamic routing, guidance navigation and control systems, light detection and ranging (LiDAR), object tracking, OpenCV, path analysis, path finding, remote sensing, scene understanding, unmanned aerial systems (UAS).

**Generative AI:** Adobe Sensei, ChatGPT, CrewAI, DALL-E image generator, generative adversarial networks, generative AI agents, generative artificial intelligence,Google Bard, image inpainting, image super-resolution, LangGraph, large language modeling, Microsoft Copilot, multimodal learning, multimodal models, prompt engineering, retrieval-augmented generation, Stable Diffusion, text summarization, text to speech (TTS), variational autoencoders (VAEs).

**Machine learning:** AdaBoost (adaptive boosting), adversarial machine learning, Apache MADlib, Apache Mahout, Apache SINGA, Apache Spark, association rule learning, attention mechanisms, AutoGen, automated machine learning, autonomic computing, AWS SageMaker, Azure Machine Learning, bagging techniques, Bayesian belief networks, Boltzmann Machine, boosting, Chi-Squared Automatic Interaction Detection (CHAID), Classification and Regression Tree (CART), cluster analysis, collaborative filtering, concept drift detection, confusion matrix, cyber-physical systems, Dask (Software), data classification, Dbscan, decision models, decision-tree learning, dimensionality reduction, distributed machine learning, Dlib (C++ library), embedded intelligence, ensemble methods, evolutionary programming, expectation maximization algorithm, feature engineering, feature extraction, feature learning, feature selection, federated learning, game AI, Gaussian process, genetic algorithm, Google AutoML, Google Cloud ML Engine, gradient boosting, gradient boosting machines (GBM), H2O.ai, hidden Markov model, hyperparameter optimization, incremental learning, inference engine, k-means clustering, kernel methods, Kubeflow, LIBSVM, loss functions, machine learning, machine learning algorithms, machine learning methods, machine learning model monitoring and evaluation, machine learning model training, Markov chain, matrix factorization, meta learning, Microsoft Cognitive Toolkit (CNTK), MLflow, MLOps (machine learning operations), mlpack (C++ library), ModelOps, Naive Bayes Classifier, neural architecture compression, neural architecture search (NAS), objective function, Oracle Autonomous Database, Perceptron, Predictionio, predictive modeling, programmatic media buying, Pydata, PyTorch (machine learning library), PyTorch Lightning, Random Forest Algorithm, recommender systems, reinforcement learning, Scikit-Learn (Python package), semi-uupervised learning, soft computing, sorting algorithm, supervised learning, support vector machines (SVM), t-SNE (t-distributed Stochastic Neighbor Embedding), test datasets, topological data analysis (TDA), Torch (machine learning), training datasets, transfer learning, transformer (machine learning model), unsupervised learning, Vowpal Wabbit, Xgboost, Theano (software).

**Natural language processing:** AI copywriting, Amazon Alexa, Amazon Textract, ANTLR, Apache OpenNLP, BERT (NLP Model), chatbot, computational linguistics, conversational AI, DeepSpeech, dialog systems, fastText, fuzzy logic, handwriting recognition, Hugging Face (NLP framework), Hugging Face Transformers, intelligent agent, intelligent virtual assistant, Kaldi, language model, latent Dirichlet allocation, Lexalytics, machine translation, Microsoft LUIS, natural language generation (NLG), natural language processing (NLP), natural language programming, natural language toolkits, natural language understanding (NLU), natural language user interface, nearest neighbour algorithm, Nuance Mix, optical character recognition (OCR), screen reader, semantic analysis, semantic interpretation for speech recognition, semantic kernel, semantic parsing, semantic search, sentence transformers, sentiment analysis, Seq2Seq, Shogun, small language model, speech recognition, speech recognition software, speech synthesis, statistical language acquisition, summarization methods, text mining, text retrieval systems, text to speech (TTS), tokenization, Vespa, voice assistant technology, voice interaction, voice user interface, word embedding, Word2Vec models.

**Neural networks:** Apache MXNet, artificial neural networks, autoencoders, Caffe (framework), Caffe2, Chainer (Deep Learning Framework), convolutional neural networks (CNN), Cudnn, deep learning, deep learning methods, Deeplearning4j, deep reinforcement learning (DRL), evolutionary acquisition of neural topologies, Fast.AI, graph neural networks (GNNs), Keras (neural network library), Long Short-Term Memory (LSTM), neural ordinary differential equations, OpenVINO, PaddlePaddle, Pybrain, recurrent neural network (RNN), reinforcement learning (RL), residual networks (ResNet), sequence-to-sequence models (seq2seq), spiking neural networks, TensorFlow.

**Robotics:** advanced robotics, bot framework, cognitive robotics, meta-reinforcement learning, motion planning, Nvidia Jetson, OpenAI Gym environments, reinforcement learning from human feedback (RLHF), robot framework, robot operating systems, robotic automation software, robotic liquid handling systems, robotic programming, robotic systems, servomotor, SLAM algorithms (Simultaneous Localization and Mapping).

**Visual image recognition:** 3D reconstruction, activity recognition, computer vision, contextual image classification, Deck.gl, digital image processing, digital twin technology, eye tracking, face detection, facial recognition, general-purpose computing on graphics processing units, gesture recognition, image analysis, image captioning, image matching, image recognition, image segmentation, image sensor, ImageNet, instance segmentation, machine vision, MNIST, motion analysis, object recognition, OmniPage, pose estimation, RealSense, thermal imaging analysis.

# LinkedIn

*Prepared by Rosie Hood, Akash Kaura, and Mar Carpanelli*

## LinkedIn Data

This body of work represents the world seen through LinkedIn data, drawn from the anonymized and aggregated profile information of LinkedIn's more than 1 billion members around the world. As such, it is influenced by how members choose to use the platform, which can vary based on professional, social, and regional culture, as well as overall site availability and accessibility. In publishing insights from LinkedIn's Economic Graph, LinkedIn aims to provide accurate statistics while ensuring the privacy of LinkedIn's members. As a result, all data shows aggregated information for the corresponding period following strict data quality thresholds that prevent disclosing any information about specific individuals.

## Country Sample

LinkedIn provides data on Argentina, Australia, Austria, Belgium, Brazil, Canada, Chile, Costa Rica, Croatia, Cyprus, Czechia, Denmark, Estonia, Finland, France, Germany, Greece, Hong Kong SAR, Hungary, Iceland, India, Indonesia, Ireland, Israel, Italy, Latvia, Lithuania, Luxembourg, Mexico, Netherlands, New Zealand, Norway, Poland, Portugal, Romania, Saudi Arabia, Singapore, Slovenia, South Africa, South Korea, Spain, Sweden, Switzerland, Turkey, United Arab Emirates, United Kingdom, United States, and Uruguay.

## Skills

LinkedIn members self-report their skills on their LinkedIn profiles. Currently, more than 41,000 distinct, standardized skills are identified by LinkedIn.

LinkedIn categorizes AI skills into two mutually exclusive groups: "AI Engineering" and "AI Literacy." Broadly speaking, AI Engineering skills refer to the technical expertise and practical competencies required to design, develop, deploy, and maintain artificial intelligence systems, and AI Literacy skills refer to the knowledge, abilities, and critical thinking competencies needed to understand, evaluate, and effectively interact with artificial intelligence technologies.

As skills are ever evolving, we maintain and refresh these classifications on a periodic basis. For a list of skills included in this analysis, please see LinkedIn's AI skills List below.

### Industry

LinkedIn's industry taxonomy is a collection of entities that share economic activities and contribute to a specific product or service. An industry represents the products or services that a company offers or sells. LinkedIn analyzes the following industries in the context of AI: education; financial services; manufacturing; professional services; and technology, information, and media.

### Gender

LinkedIn recognizes that some LinkedIn members identify beyond the traditional gender constructs of "man" and "woman." If not explicitly self-identified, LinkedIn has inferred the gender of members included in this analysis either by the pronouns used on their LinkedIn profiles or on the basis of first names. Members whose gender could not be inferred as either male or female were excluded from any gender analysis. Please note that LinkedIn filtered out countries where their gender attribution algorithm did not have sufficient coverage.

### AI Jobs or Occupations

LinkedIn member titles are standardized and grouped into over 16,000 occupations. These are not sector or country specific. An AI job requires AI skills to perform the job. Examples of such occupations include (but are not limited to): machine learning engineer, artificial intelligence specialist, data scientist, and computer vision engineer.

### AI Talent

A LinkedIn member is considered AI talent if they have explicitly added at least two AI skills to their profile and/or they are or have been employed in an AI job.

## METHODOLOGIES

### 1. Top AI Skills

These are the AI skills most frequently added by LinkedIn members from 2015 onward.

**Interpretation:** The most added AI Engineering skills globally are machine learning, AI, and deep learning.

### 2. Fastest Growing AI Skills

The year-over-year growth rate for AI skills most frequently added by all members. Please note that LinkedIn implements thresholds to skill add volumes in the most recent year, which are set at the 50th percentile of the most recent year's AI skill adds distribution by country.

**Interpretation:** The fastest growing AI Engineering skills globally are custom GPTs, AI productivity, and AI agents.

### 3. AI Talent Concentration

The counts of AI talent are used to calculate talent concentration metric. In other words, to calculate the country-level AI talent concentration, LinkedIn uses the counts of AI talent in a particular country divided by the counts of LinkedIn members in that country. Note that concentration metrics may be influenced by LinkedIn coverage in these countries and should be utilized with caution.

**Interpretation:** AI talent with AI Engineering skills represents 0.78% of LinkedIn members in the United States.

### 4. Relative AI Talent Hiring Rate YoY Ratio

The LinkedIn hiring rate is a measure of hires normalized by LinkedIn membership. It is computed as the percentage of LinkedIn members who added a new employer in the same period the job began, divided by the total number of LinkedIn members in the corresponding location.

The AI hiring rate is computed using the overall hiring rate methodology, but it only considers members classified as AI talent. The relative AI talent hiring rate YoY ratio is the year-over-year change in the AI hiring rate relative to the overall hiring rate in the same country. LinkedIn shares a 12-month moving average.

**Interpretation:** In the United States, the ratio of AI talent hiring relative to overall hiring has grown 24.7% year over year.

## 5. Skill Penetration

### SKILLS GENOME

For any category (occupation, country, industry, etc.), the skills genome is an ordered list (a vector) of the 50 skills most characteristic of that category. These most characteristic skills are determined using a TF-IDF algorithm, which down-ranks ubiquitous skills that add little information about that specific entity (e.g., Microsoft Word) and up-ranks skills unique to that specific entity (e.g., artificial intelligence). Further details are available at LinkedIn's skills genome and the LinkedIn–World Bank Methodology note.

As an example, Table 1 details the skills genome of the technology, information, and media industry in the United States in 2024, displaying the top 10 skills ranked by TF-IDF.

| Skill name | TF-IDF skill rank |
|---|---|
| Amazon Web Services (AWS) | 1 |
| Software as a Service (SaaS) | 2 |
| Artificial intelligence (AI) | 3 |
| Python (programming language) | 4 |
| Go-to-market strategy | 5 |
| Customer success | 6 |
| Large language models (LLM) | 7 |
| Salesforce.com | 8 |
| SQL | 9 |
| Generative AI | 10 |

### AI SKILLS PENETRATION

The aim of this indicator is to measure the intensity of AI skills in a given category using the following methodology:

- LinkedIn computes frequencies for all self-added skills by LinkedIn members in a given entity (occupation, industry, etc.) from 2015 onward.
- LinkedIn reweights skill frequencies using a TF-IDF model to get the top 50 most representative skills in that entity. These 50 skills compose the "skill genome" of that entity.
- LinkedIn computes the share of skills that belong to the AI skill group out of the top skills in the selected entity.

**Interpretation:** The AI skills penetration rate signals the prevalence of AI skills across occupations, or the intensity with which LinkedIn members utilize AI skills in their jobs. For example, the top 50 skills for the occupation of engineer are calculated based on the weighted frequency with which they appear in LinkedIn members' profiles. If four of the skills that engineers possess belong to the AI skills group, this measure indicates that the penetration of AI skills is estimated to be 8% among engineers (i.e., 4/50).

### RELATIVE AI SKILLS PENETRATION

To allow for skills penetration comparisons across countries, the skills genomes are calculated, and a relevant benchmark is selected (e.g., a global average). A ratio is then constructed between a country and the benchmark's AI skills penetrations, controlling for occupations.

**Interpretation:** If a country has a relative AI skills penetration of 1.5, that means AI skills are 1.5 times as frequent as in the benchmark, for an overlapping set of occupations.

### GLOBAL COMPARISON

For cross-country comparisons, LinkedIn presents the relative penetration rate of AI skills, measured as the sum of the penetration of each AI skill across occupations in a given country, divided by the average global penetration of AI skills across the overlapping occupations in a sample of countries.

**Interpretation:** A relative penetration rate of 2 means the average penetration of AI skills in that country is two times the global average across the same set of occupations.

#### GLOBAL COMPARISON: BY INDUSTRY

The relative AI skills penetration by country for a given industry provides an in-depth sectoral decomposition of AI skills penetration across industries and countries.

**Interpretation:** A country's relative AI skill penetration rate of 2 in the education sector means the average penetration of AI skills in that country is two times the global average across the same set of occupations in that sector.

#### GLOBAL COMPARISON: BY GENDER

The relative AI skills penetration by gender provides a cross-country comparison of AI skills penetrations within a gender. Since the global averages are distinct for each gender, this metric should only be used to compare country rankings within each gender, not for cross-gender comparisons within countries.

**Interpretation:** A country's AI skills penetration for women of 1.5 means that female members in that country are 1.5 times more likely to list AI skills than the average female member in all countries pooled together across the same set of occupations that exist in the country-gender combination.

#### GLOBAL COMPARISON: ACROSS GENDERS

The relative AI skills penetration across genders allows for cross-gender comparisons within and across countries globally, since LinkedIn compares a country's AI skills penetration by gender to the same global average regardless of gender.

### 6. Female Representation in AI

This refers to the share of AI talent occupied by women.

**Interpretation:** Female representation within AI talent with AI Engineering skills is 30.5% globally.

### 7. AI Talent Migration

Data on migration comes from the World Bank Group–LinkedIn "Digital Data for Development" partnership (see https://linkedindata.worldbank.org/ and Zhu et al. (2018)). LinkedIn migration rates are derived from the self-identified locations of LinkedIn member profiles. For example, when a LinkedIn member updates their location from Paris to London, this is counted as a migration. Migration data is available from 2019 onward.

LinkedIn data provides insights to countries on AI talent gained or lost due to migration trends. AI talent migration is considered for all members with AI skills/holding AI jobs at time "t" for country A as the country of interest and country B as the source of inflows and destination for outflows. Thus, net AI talent migration between country A and country B is calculated as:

$$Net\ AI\ Talent\ Migration_{a,b,t} = \frac{Net\ AI\ Talent\ flows_{a,b,t}}{Member\ count_{a,t}}$$

Net flows are defined as total arrivals minus departures within a given time period. LinkedIn membership varies between countries, which can prove challenging when interpreting absolute movements of members from one country to another. Migration flows are therefore normalized with respect to each country. For example, for country A, all absolute net flows into and out of country A, regardless of origin and destination countries, are normalized based on the LinkedIn membership of country A at the end of each year and multiplied by 10,000. Hence, this metric indicates relative talent migration from all countries to and from country A. Please note that minimum thresholds have been applied such that transitions have a sufficient sample size.

**Interpretation:** The United States had a positive net flow of AI talent relative to its membership size at 1.07 net flow per 10,000 members.

### 8. Career Transitions Into AI Jobs

LinkedIn considers the source occupations that feed AI occupations, analyzing the share of transitions into AI occupations pooled over a five-year period. Career transitions are computed by aggregating member-level job transitions from one occupation to another occupation the member has not previously held. LinkedIn excludes first occupations added by new graduates and intra-occupation transitions.

**Interpretation:** In the United States, 26.9% of transitions into AI engineer came from software engineer, followed by 13.3% from data scientist.

### THE LINKEDIN AI SKILLS LIST

#### AI Engineering

3D reconstruction, AI agents, AI productivity, AI strategy, algorithm analysis, algorithm development, Amazon Bedrock, Apache Spark ML, applied machine learning, artificial intelligence (AI), artificial neural networks, association rules, audio synthesis, autoencoders, automated clustering, automated feature engineering, automated machine learning (AutoML), automated reasoning, autoregressive models, Azure AI Studio, Caffe, chatbot development, chatbots, classification, cognitive computing, computational geometry, computational intelligence, computational linguistics, concept drift adaptation, conditional generation, conditional image generation, convolutional neural networks (CNN), custom GPTs, decision trees, deep convolutional generative adversarial networks (DCGAN), deep convolutional neural nNetworks (DCNN), deep learning, deep neural networks (DNN), evolutionary algorithms, expert systems, facial recognition, feature extraction, feature selection, fuzzy logic, generative adversarial imitation learning, generative adversarial networks (GANs), generative AI, generative design optimization, generative flow models, generative modeling, generative neural networks, generative optimization, generative pre-training, generative query networks (GQNs), generative replay memory, generative synthesis, gesture recognition, Google Cloud AutoML, graph embeddings, graph networks, hyperparameter optimization, hyperparameter tuning, image generation, image inpainting, image processing, image synthesis, image-to-image translation, information extraction, intelligent agents, k-means clustering, Keras, knowledge discovery, knowledge representation and reasoning, LangChain, large language model operations (LLMOps), large language models (LLM), machine learning, machine learning algorithms, machine translation, Microsoft Azure Machine Learning, MLOps, model compression, model interpretation, model training, music generation,nNatural language generation, natural language processing (NLP), natural language understanding, neural network architecture design, neural networks, NLTK, object recognition, ontologies, OpenAI API, OpenCV, parsing, pattern recognition, predictive modeling, probabilistic generative models, probabilistic programming, prompt flow, PyTorch, question answering, random forest, RapidMiner, recommender systems, recurrent neural networks (RNN), reinforcement learning, responsible AI, Scikit-Learn, semantic technologies, semantic web, sentiment analysis, speech recognition, Spring AI, statistical inference, style transfer, StyleGAN, supervised learning, support vector machine (SVM), synthetic data generation, TensorFlow, text analytics, text classification, text generation, text mining, text-to-image generation, Theano, time series forecasting, transformer models, unsupervised learning, variational autoencoders (VAEs), video generation, web mining, Weka, WordNet.

#### AI Literacy

AI Builder, AI prompting, Anthropic Claude, ChatGPT, DALL-E, generative AI, Generative AI Studio, generative AI tools, generative art, GitHub Copilot, Google Bard, Google Gemini, GPT-3, GPT-4, LLaMA, Microsoft Copilot, Microsoft Copilot Studio, Midjourney, multimodal prompting, prompt engineering, Stable Diffusion.

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# Quid

*Quid insights prepared by Heather English and Hansen Yang*

Quid uses its own in-house LLM and other smart search features, as well as traditional Boolean query, to search for focus areas, topics, and keywords within many datasets: social media, news, forums and blogs, companies, patents, as well as other custom feeds of data (e.g., survey data). Quid has many visualization options and data delivery endpoints, including network graphs based on semantic similarity, in-platform dashboarding capabilities, and programmatic PostgreSQL database delivery. Quid applies best-in-class AI and NLP to reveal hidden patterns in large datasets, enabling users to make data-driven decisions accurately, quickly, and efficiently.

### Search, Data Sources, and Scope

Over 8 million global public and private company profiles from multiple data sources are indexed to search across company descriptions, while filtering and including metadata ranging from investment information to firmographic information, such as founding year, headquarter location, and more. Company information is updated on a weekly basis. The Quid algorithm reads a large amount of text data from each document to make links between different documents based on their similar language. This process is repeated at an immense scale, which produces a network of different clusters identifying distinct topics or focus areas. Trends are identified based on keywords, phrases, people, companies, and institutions that Quid identifies and other metadata that is put into the software.

### Data

### Companies

Organization data is embedded from Capital IQ and Crunchbase. These companies include every type of organization (private, public, operating, operating as a subsidiary, out of business) throughout the world. The investment data includes private investments, M&A, public offerings, minority stakes held by PE/ VCs, corporate venture arms, governments, and institutions both within and outside the United States. Some data is unavailable—for instance, when investors' names or funding amounts are not disclosed. Quid embeds Capital IQ data as a default and adds in data from Crunchbase for the data points that are not captured in Capital IQ. This not only yields comprehensive and accurate data on all global organizations, but it also captures early-stage startups and funding events data.

### Search Parameters

Boolean query is used to search for focus areas, topics, and keywords within the archived company database and within their business descriptions and websites. Quid can filter out the search results by HQ regions, investment amount, operating status, organization type (private/ public), and founding year. Quid then visualizes these companies by semantic similarity. If there are more than 7,000 companies from the search result, Quid selects the 7,000 most relevant companies for visualization based on the language algorithm. Boolean search: "artificial intelligence" or "AI" or "machine learning" or "deep learning"

### Companies

- Global AI and ML companies that have received investments (private, IPO, M&A) from Jan. 1, 2014, to Dec. 31, 2024.
- Global AI and ML companies that have received over $1.5 million for the past 10 years (Jan. 1, 2014, to Dec. 31, 2024).
- Global data was also pulled for a generative AI query (Boolean search: "generative AI" or "gen AI" OR "generative artificial intelligence") for companies that have received over $1.5 million for the past 10 years (Jan. 1, 2014, to Dec. 31, 2024).

### Target Event Definitions

- **Private investment:** A private placement is a private sale of newly issued securities (equity or debt) by a company to a select investor or group of investors. The stakes that buyers take in private placements are often minority stakes (under 50%), although it is possible to take control of a company through a private placement as well, in which case the private placement would be a majority stake investment.

- **Minority investment:** These refer to minority stake acquisitions in Quid, which take place when the buyer acquires less than 50% of the existing ownership stake in entities, asset products, and business divisions.
- **M&A:** This refers to a buyer acquiring more than 50% of the existing ownership stake in entities, asset products, and business divisions.

## McKinsey & Company

Data used in the "Corporate Activity" section was sourced from two McKinsey global surveys: "The State of AI in Early 2024: Gen AI Adoption Spikes and Starts to Generate Value" and "The State of AI: How Organizations Are Rewiring to Capture Value."

The first online survey of 2024 was in the field from Feb. 22 to March 5, and garnered responses from 1,363 participants representing the full range of regions, industries, company sizes, functional specialties, and tenures. Among the respondents, 981 said their organizations had adopted AI in at least one business function, and 878 said their organizations were regularly using gen AI in at least one function.

The second online survey of 2024 was in the field from July 16 to July 31, and garnered responses from 1,491 participants in 101 nations representing the full range of regions, industries, company sizes, functional specialties, and tenures. Forty-two percent of respondents said they work for organizations with more than $500 million in annual revenues.

To adjust for differences in response rates, the data is weighted by the contribution of each respondent's nation to global GDP.

The AI Index also considered data from previous iterations of the McKinsey survey. These include:
The State of AI in 2023: Generative AI's Breakout Year
The State of AI in 2022—and a Half Decade in Review
The State of AI in 2021
The State of AI in 2020
AI Proves Its Worth, But Few Scale Impact (2019)
AI Adoption Advances, But Foundational Barriers Remain (2018)

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