McKinsey & Company

Generative AI:
The next productivity frontier

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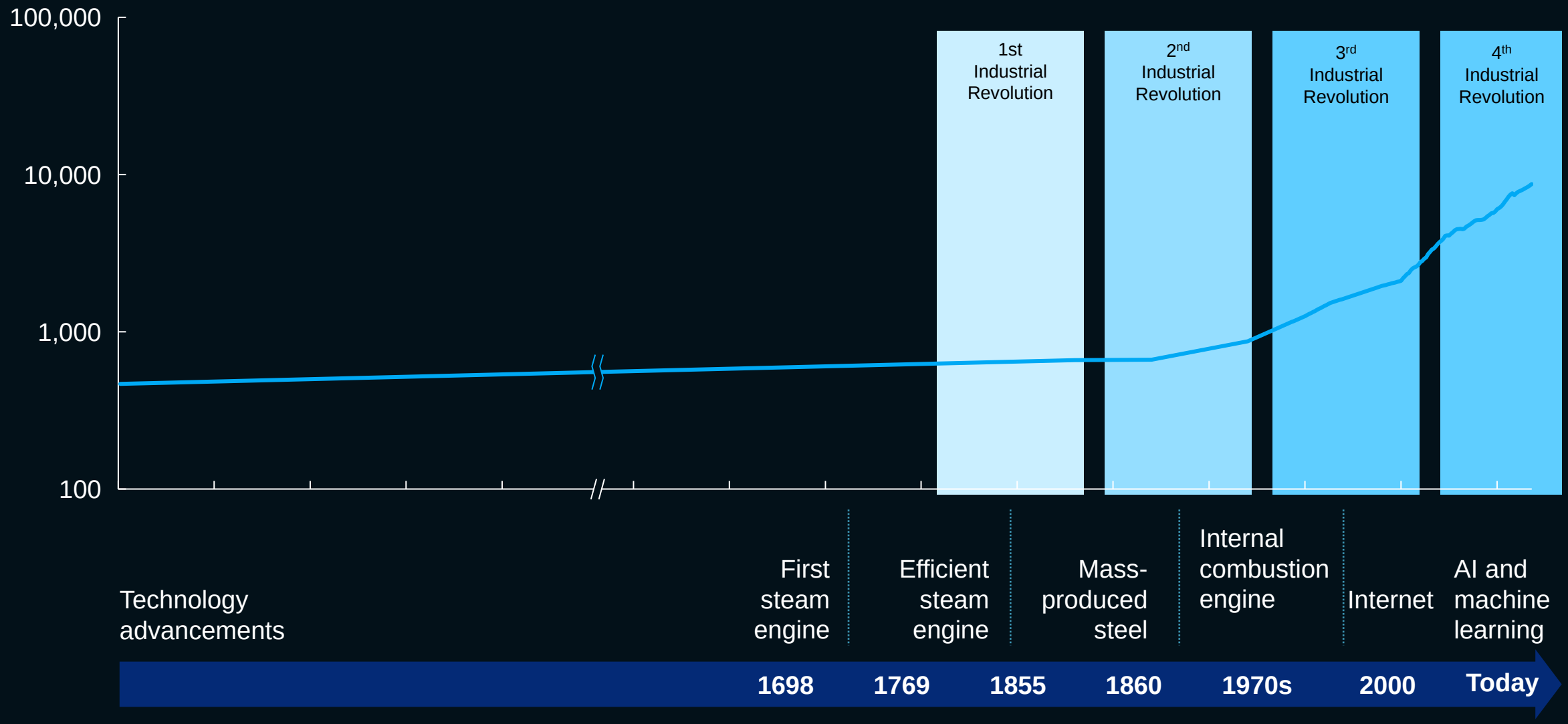
Since the Industrial Revolution, innovation has fueled economic growth

Estimated global GDP per capita, $

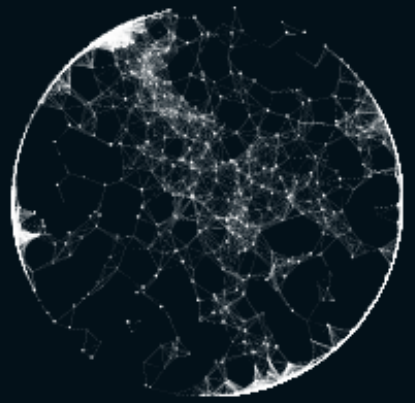


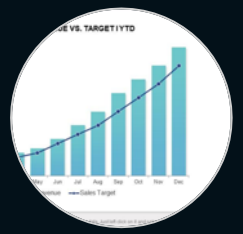
SOURCE: Angus Maddison, "Statistics on World Population, GDP and Per Capita GDP, 1–2008 AD," the Maddison Project database; McKinsey Global Institute analysis

Generative AI represents a natural evolution of Analytical AI, addressing a novel set of challenges

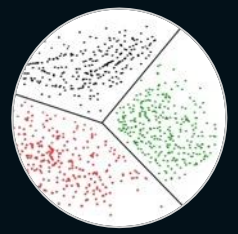
Analytical AI

Analytical AI algorithms are used to solve analytical tasks faster and more efficiently than humans — e.g., being able to classify, predict, cluster or evaluate data





Forecasting sales



Segmenting customers

Sentiment analysis

Generative AI

Generative AI algorithms are used to create new content on par with humans or greatly enhancing humans — e.g., generating audio, code, images, text, and videos

Design concepts

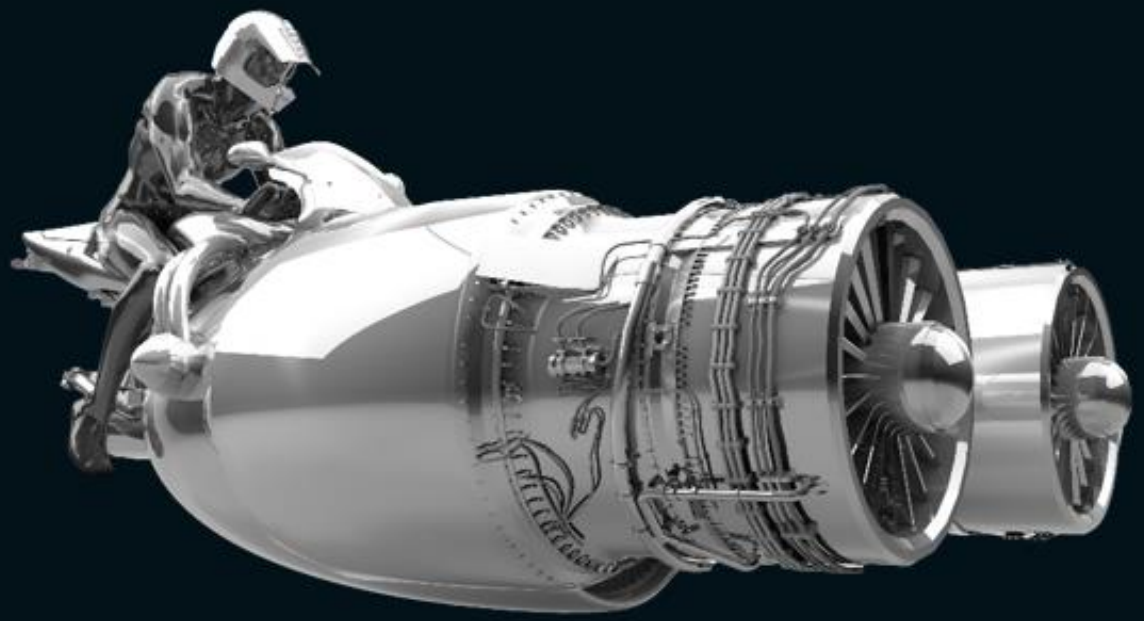
Marketing or social media copy

Code generation

Generative AI is evolving at lightning speed, and so is the focus of leaders across the world

From a few months ago…

- What is GenAI? What it is not?
- Is it hype or reality?

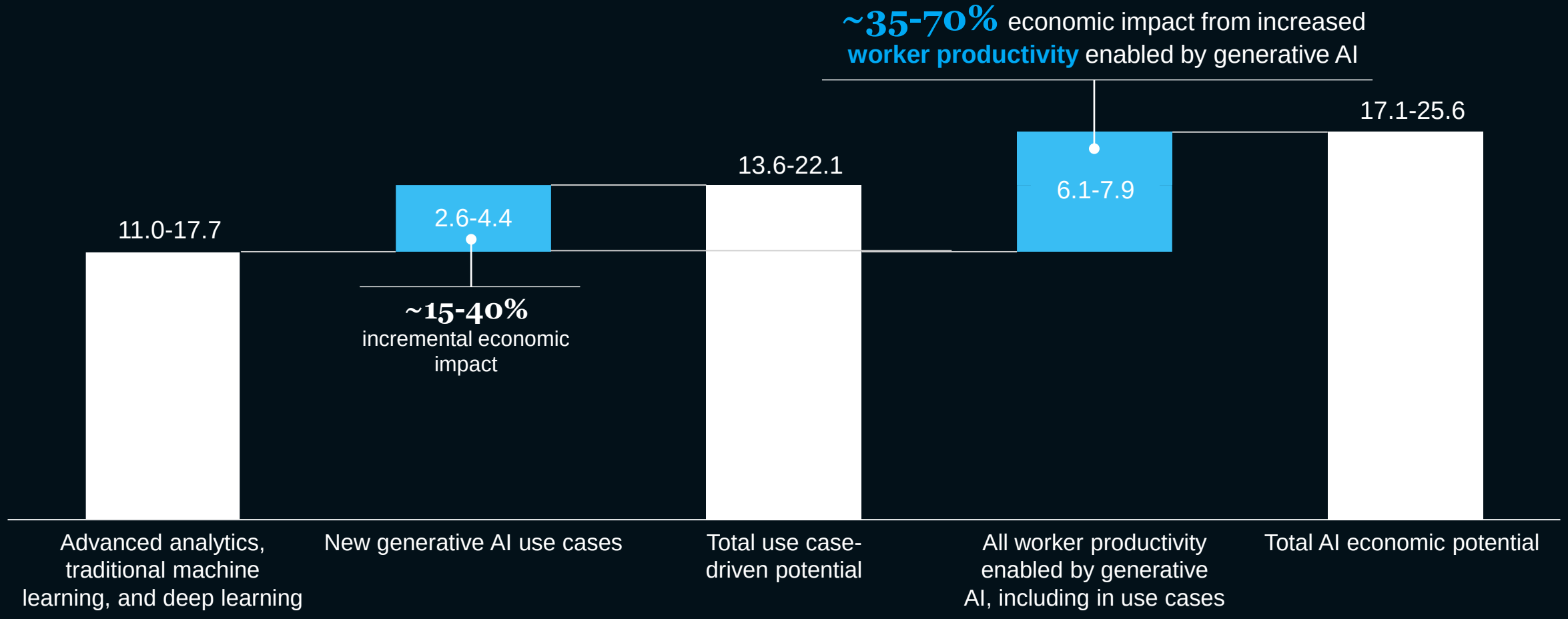


… to today

- What are specific and relevant opportunities?
- How do we organize and govern GenAI?
- Which player(s) should we partner with?
- How do we balance risk and value creation?
- What are the talent and tech stack implications?
- How do we get going and learn fast?

Generative AI could create significant value through specific use cases and broader worker productivity

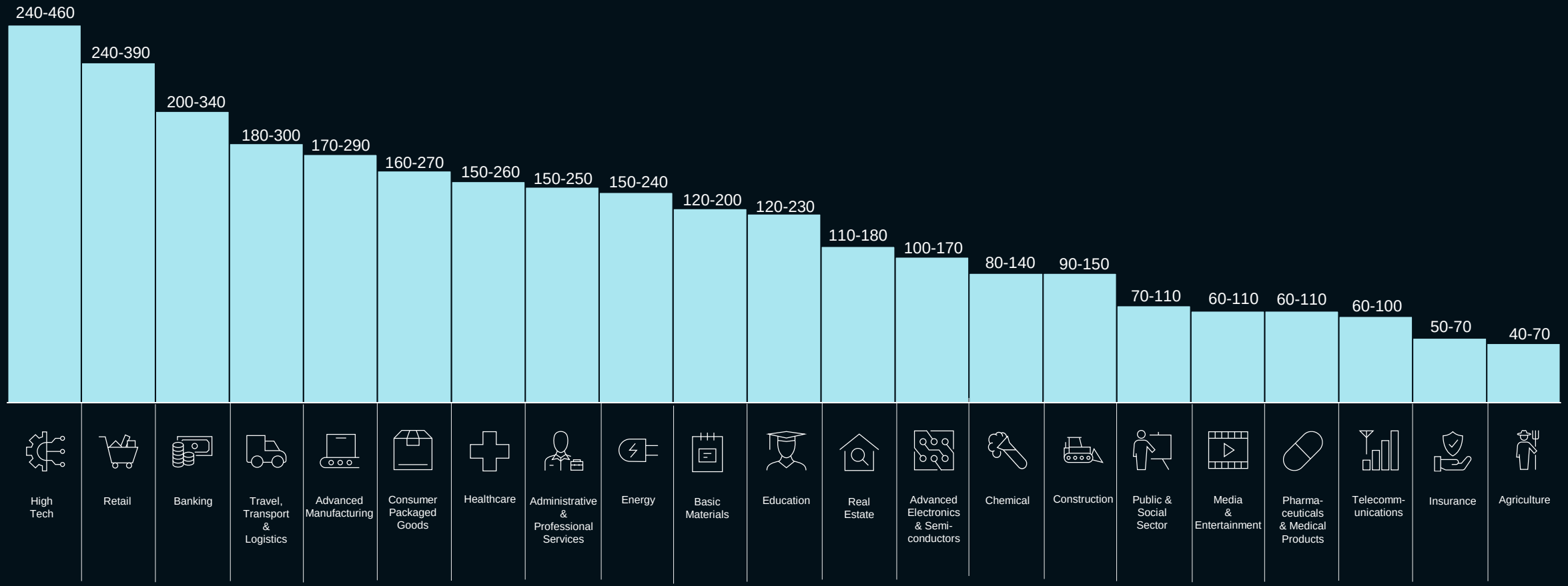
AI's potential impact on the global economy, $ trillion



Source: "The economic potential of generative AI: The next productivity frontier", McKinsey Global Institute, June 2023.

Generative AI will have a significant impact across industry sectors, potentially reaching $2.6 to $4.4 trillion annually

Generative AI productivity impact by sector (Total, $ billion)

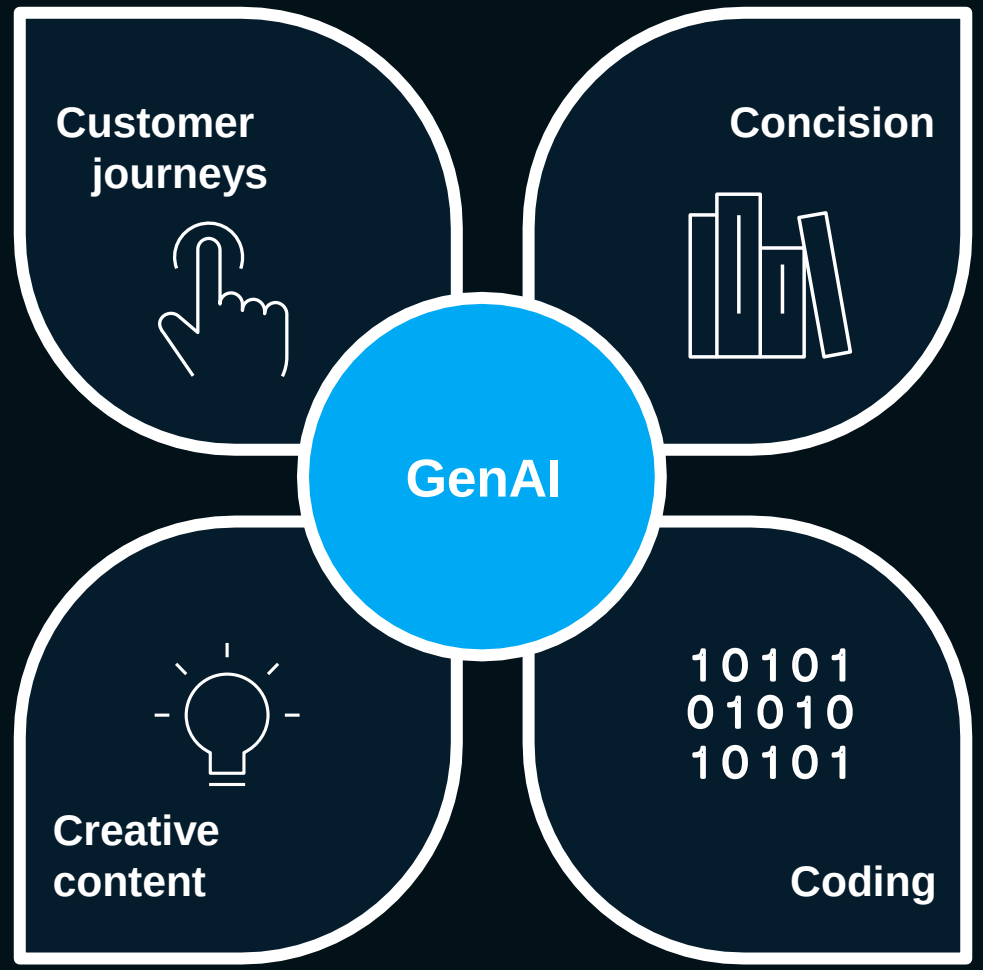


Source: McKinsey report, The economic potential of generative AI: The next productivity frontier

At a business organization level, we analyzed 60+ use cases of foundation models and generative AI across functions and sectors

Examples

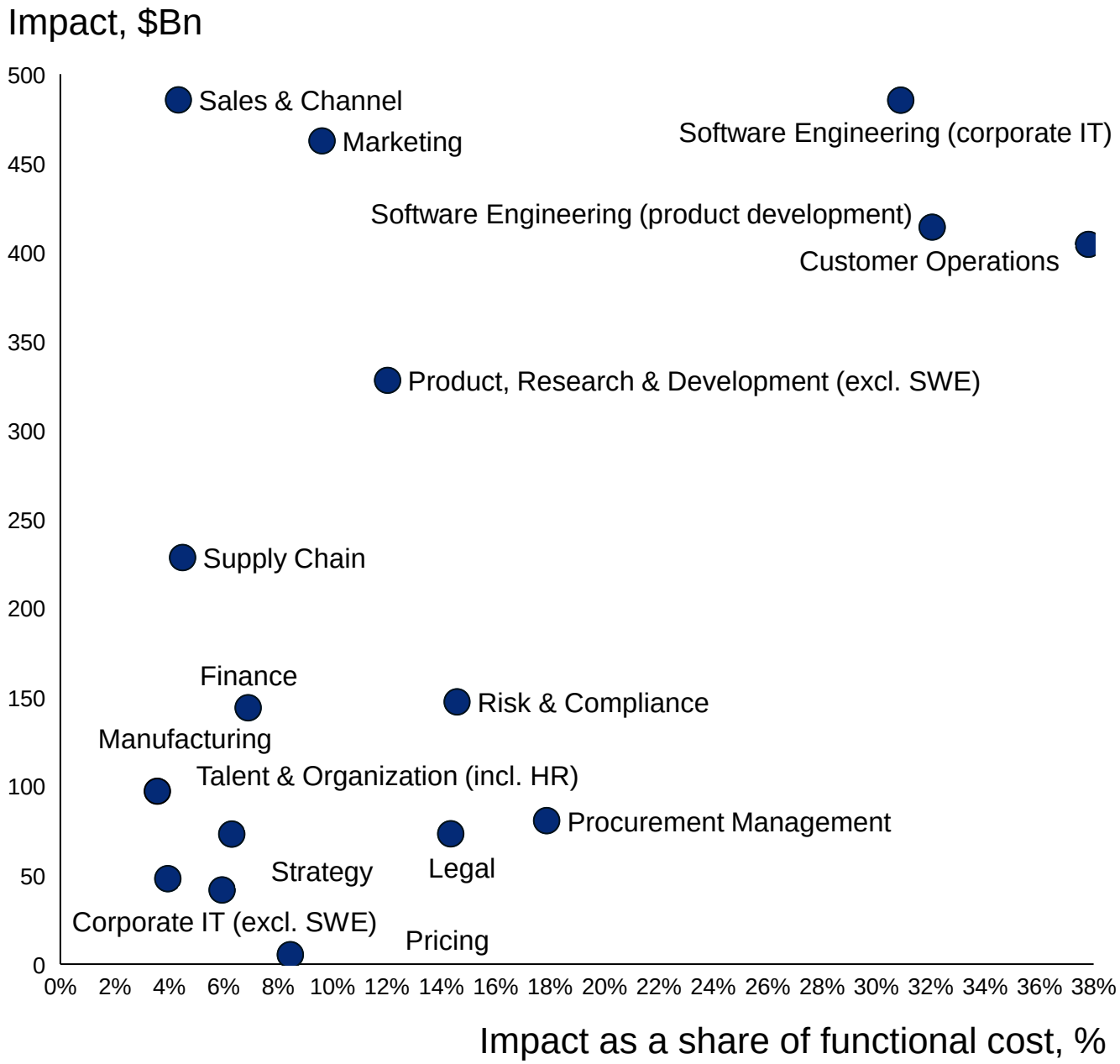
- Customer Service chatbots, recommenders, issue resolution experts, predictors of (patient or customer) journeys
- Personalized marketing comms, press releases, image-based content generation, product design



- Creating research reports, marketing analyses, acting as a “virtual expert” or “buddy”
- Prompt and code generation, code refactoring or translating, legacy system migration, user testing

Four functional areas drive ~75% of the total value from corporate use cases of generative AI

- **Customer operations**
- **Marketing & sales**
- **Software engineering**
- **R&D**



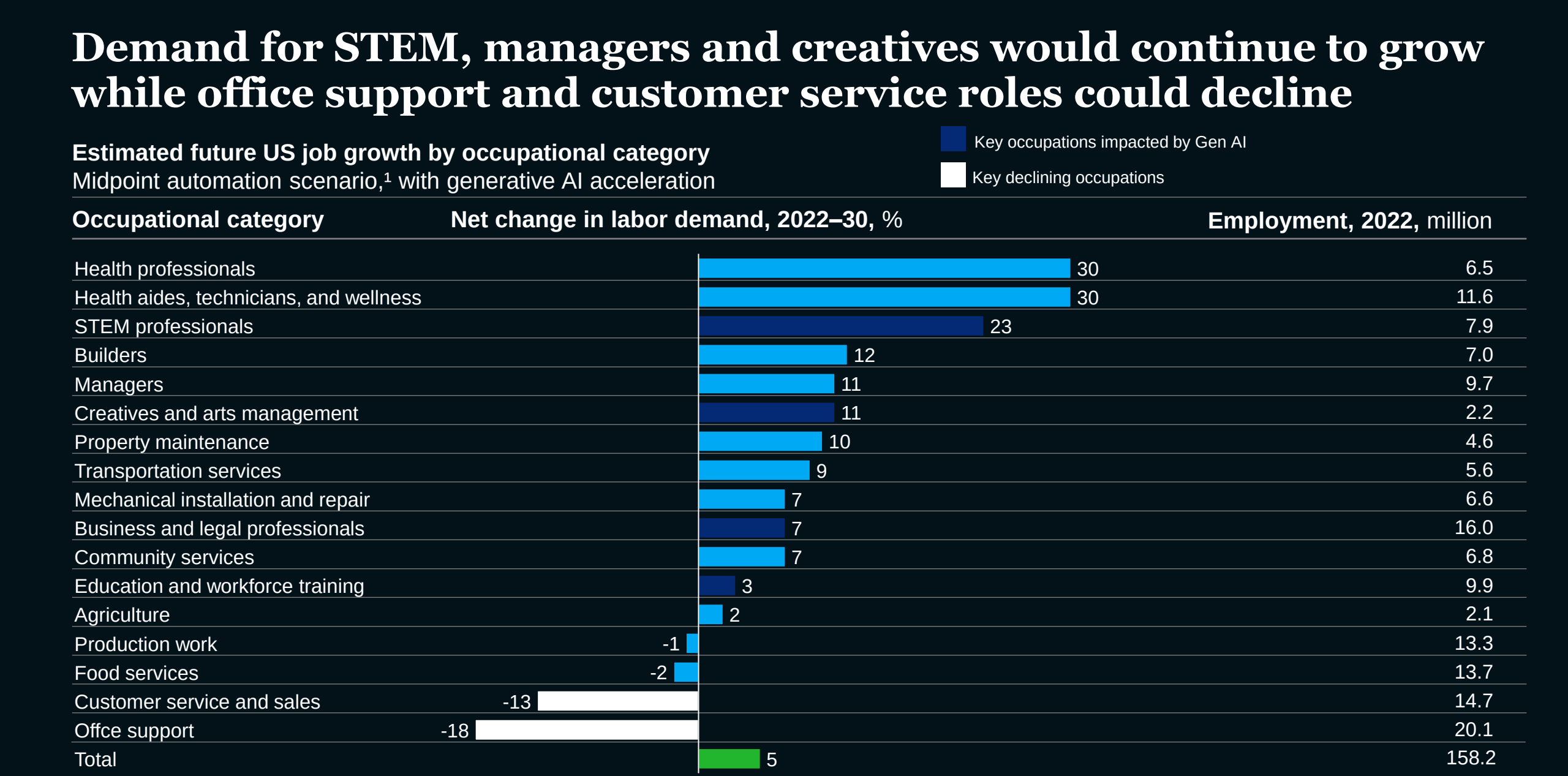
1. Includes teachers in education and physicians and nurses in healthcare

Note: Average taken for impact

Source: Internal experts | Databases: CBF, CIS / IHS, Oxford Economics, McKinsey Sales Navigator, McKinsey Manufacturing and Supply Chain 360 assessment

Demand for STEM, managers and creatives would continue to grow while office support and customer service roles could decline

Estimated future US job growth by occupational category
Midpoint automation scenario,[1] with generative AI acceleration

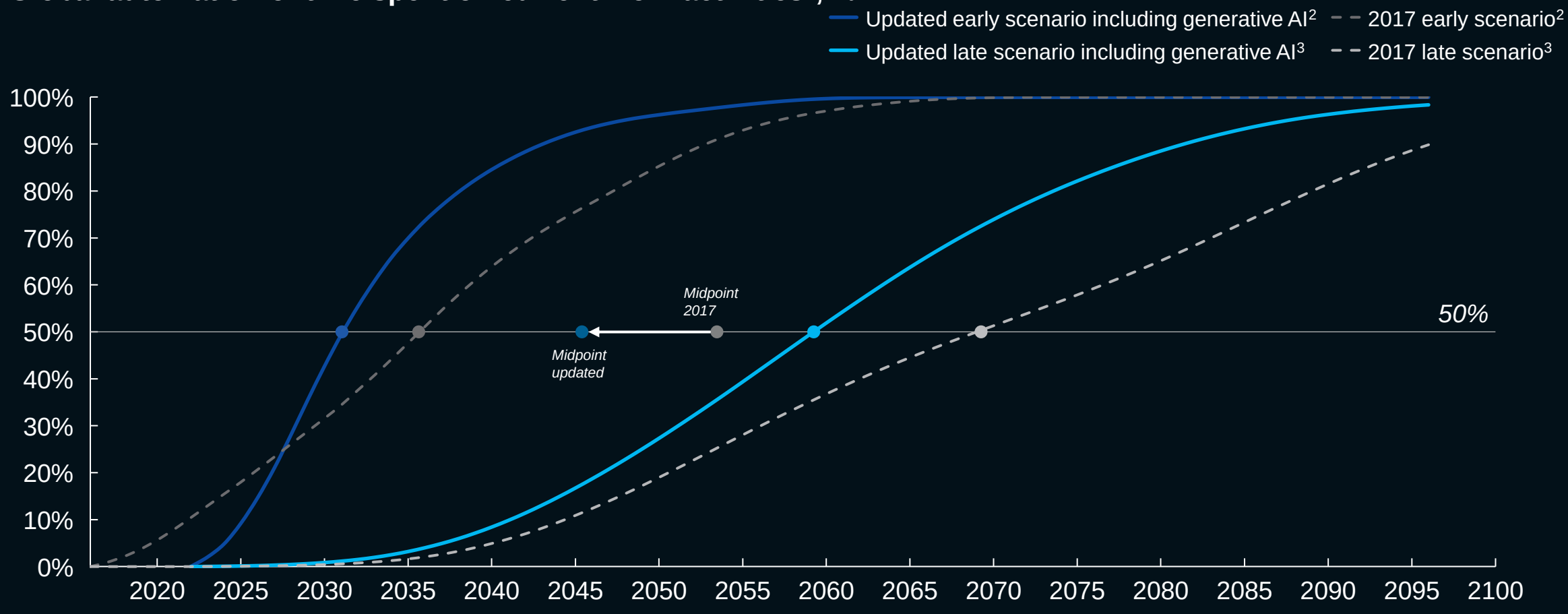


1. Midpoint automation adoption is the average of early and late automation adoption scenarios as referenced in the report of "The economic potential of generative AI: The next productivity frontier", McKinsey Global Institute, June 2023.

Source: O*NET; US Bureau of Labor Statistics; Current Population Survey, US Census Bureau; McKinsey Global Institute analysis

The midpoint scenario at which automation adoption could reach 50 percent of time spent on current work activities has accelerated by a decade

Global automation of time spent on current work activities[1], %

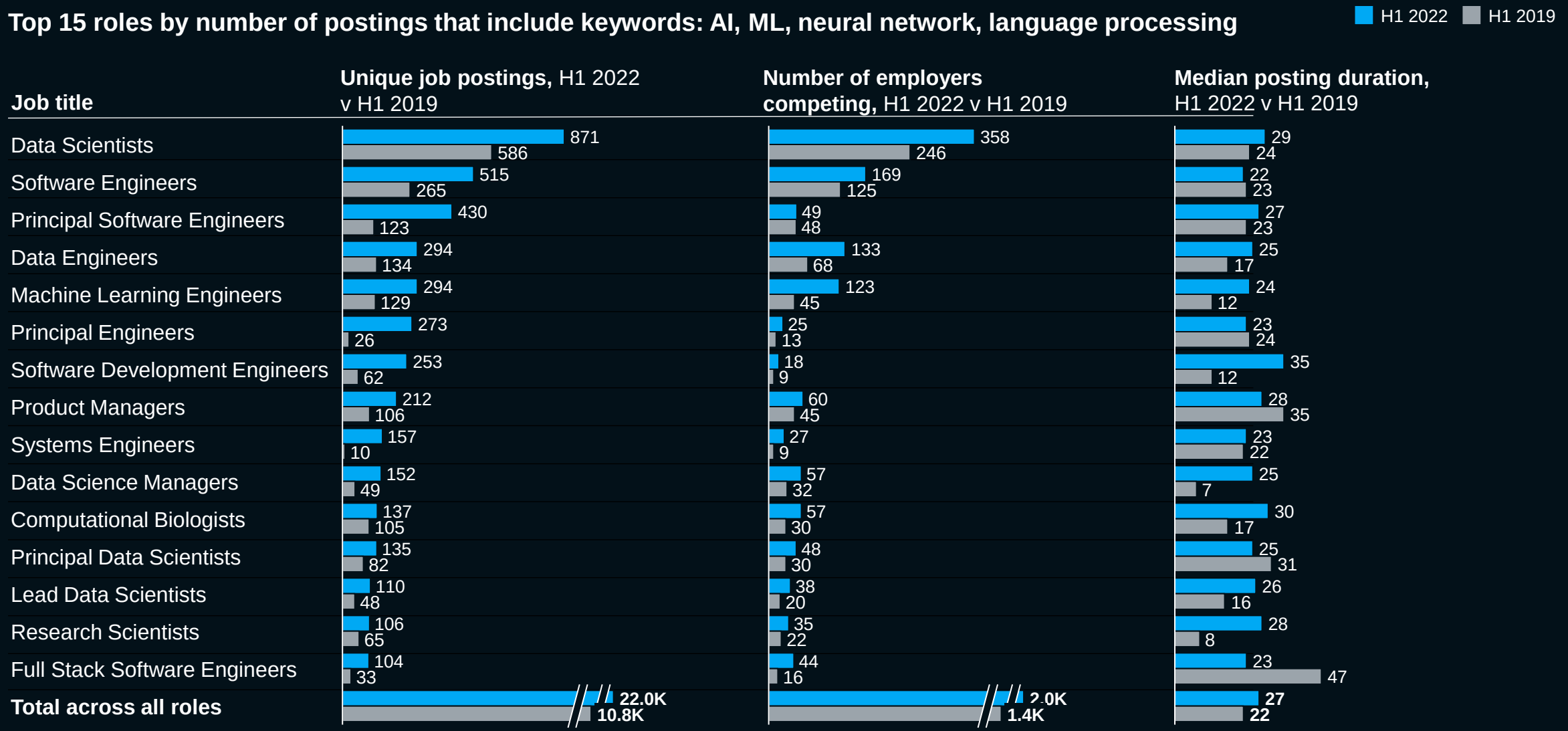


1. Includes data from 47 countries representing about 80% of employment across the world. 2017 estimates are based on the activity and occupation mix from 2016. Scenarios including generative AI are based on the 2021 activity and occupation mix
2. Early scenario: aggressive scenario for all key model parameters (technical automation potential, integration timelines, economic feasibility, and technology diffusion rates).
3. Late scenario: parameters are set for later adoption potential.

Source: McKinsey Global Institute analysis

Job postings for AI-related roles doubled since 2019, number of employers competing increased by ~40%

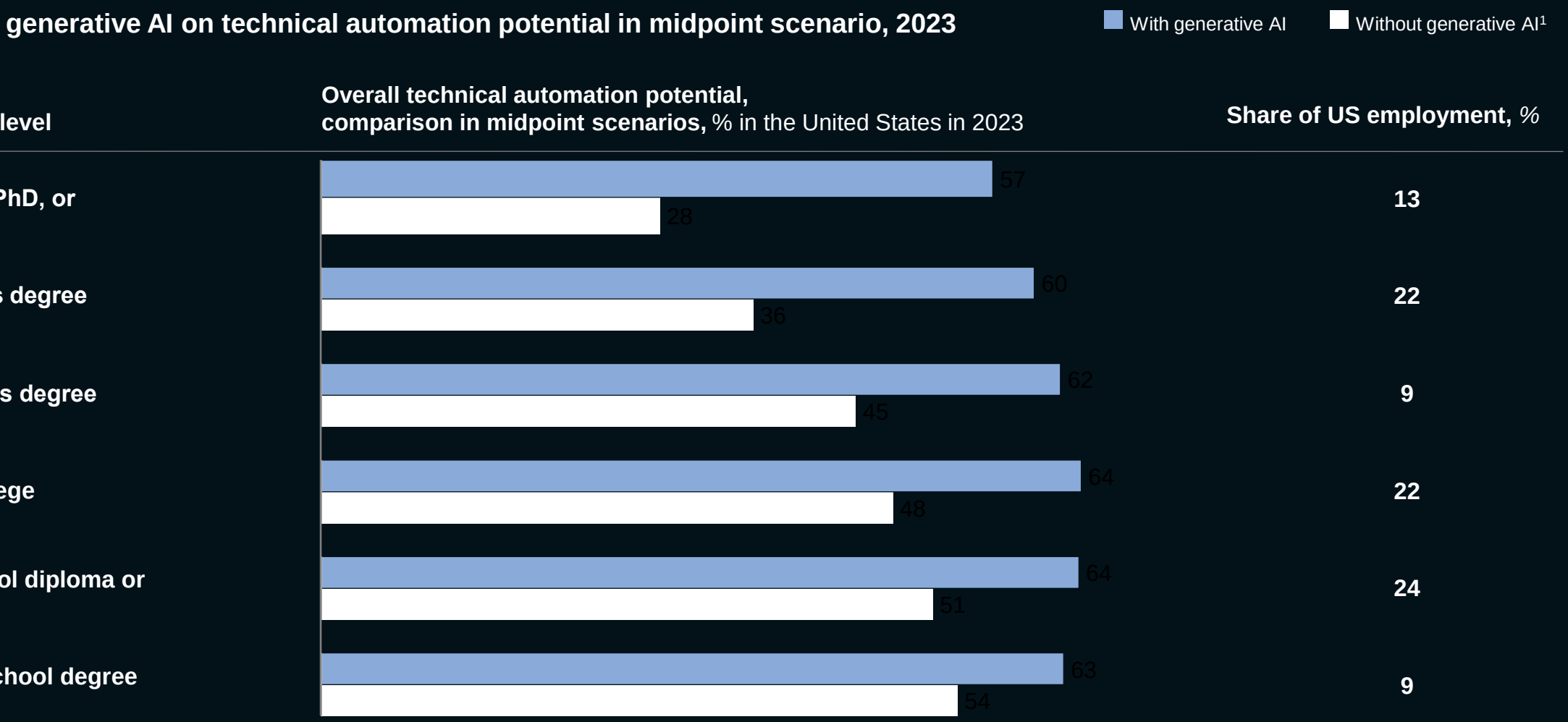
Top 15 roles by number of postings that include keywords: AI, ML, neural network, language processing



Source: Lightcast

Generative AI increases the potential for technical automation most in occupations requiring high levels of educational attainment

Impact of generative AI on technical automation potential in midpoint scenario, 2023

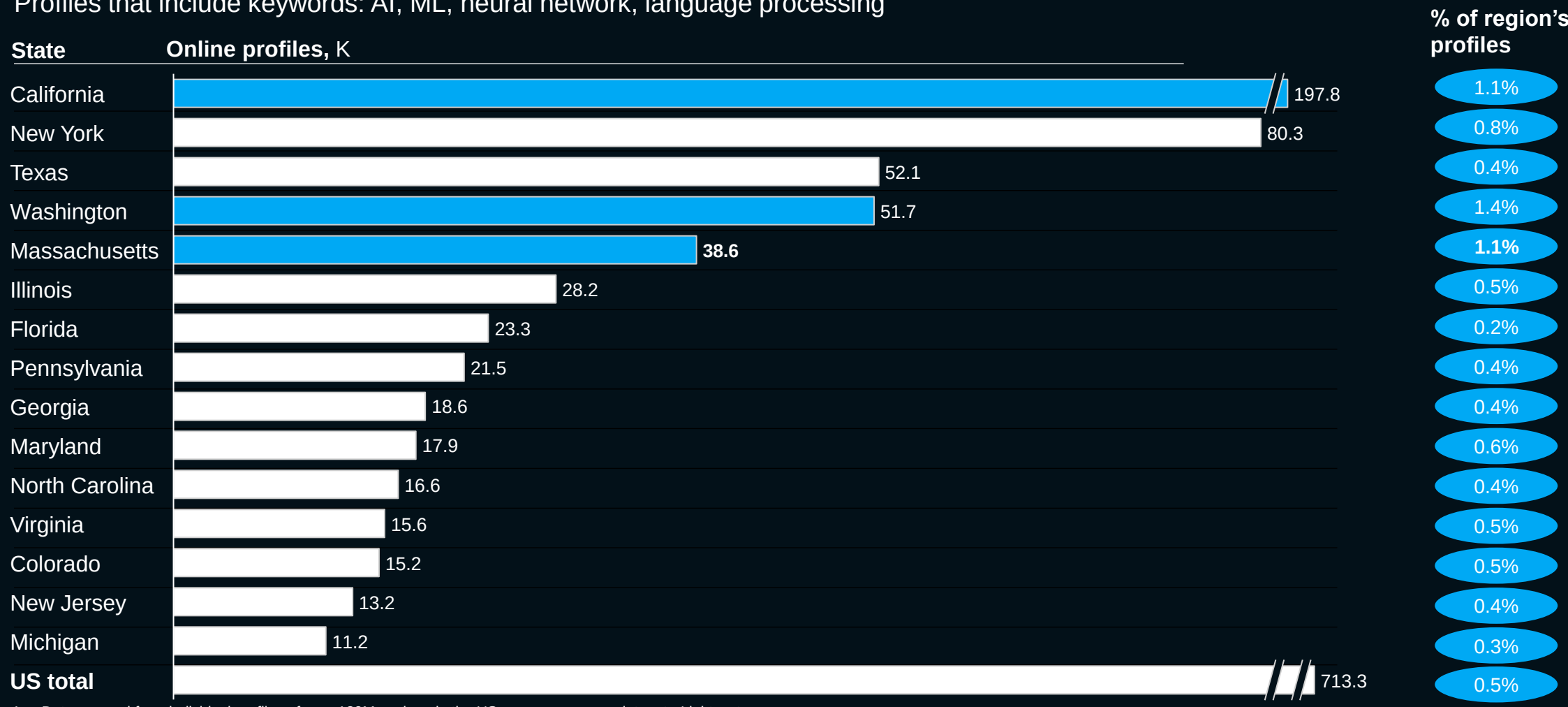


1. Previous assessment of work automation before the rise of generative AI.

Source: McKinsey Global Institute analysis

Based on online profile data, at most 1.5% of workers in top states have AI related roles or have AI skills

Top 15 states ranked by number of AI-related profiles[1]
Profiles that include keywords: AI, ML, neural network, language processing



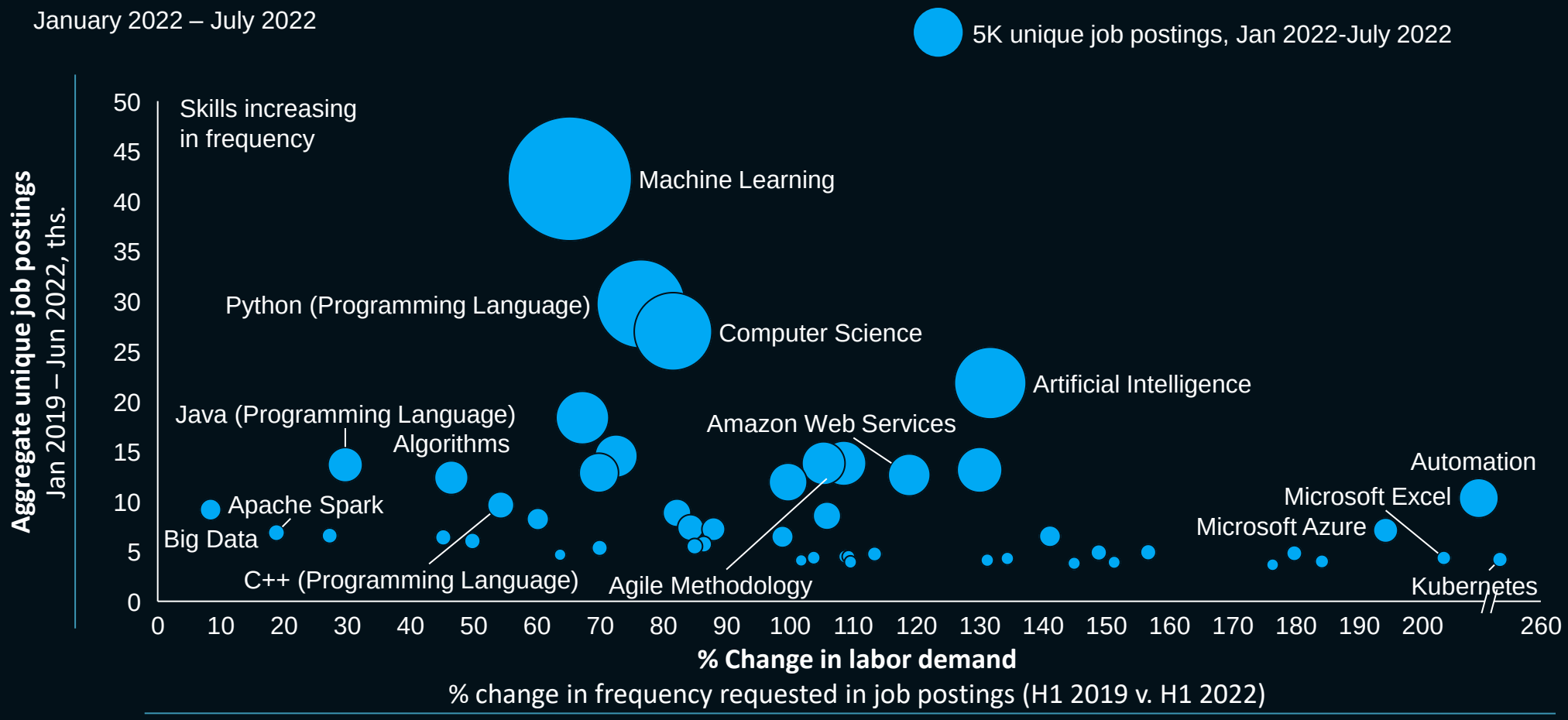
1. Data scraped from individual profiles of over 120M workers in the US, sources are proprietary to Lightcast

Source: Lightcast

Top hard skills requested in AI jobs are ML, Python and CS, but demand for cloud computing and automation-related skills grew substantially since 2019

Top 50 in-demand hard-skills[1] for MA employers in the AI sector

January 2022 – July 2022



1. Based on job postings filtered by AI keywords (AI, ML, neural network, language processing) in MA. Specialized, software, and certificate skills only (excludes common skills)

Source: Lightcast

Ideas to stimulate thinking on building the workforce of the future nationally

Higher skill mobility

- Create **harmonized skills taxonomies** across companies, sectors, and countries
- Create **national skills councils** to influence education programs early on
- Introduce **skills passports/badges** to measure people's skills rather than their educational degrees

More education and "educators"

- Define **new curricula as a blend** of required social and technological skills
- **Lifelong training benefits** to enable people to return to education / training during their entire lifetime
- **Train the "Educators"**

Economic drivers

- **Tax benefits** for investment in human capital
- Provide social **benefits directly to individuals,** not tied to employers
- **Create national recognition system or award for companies** that excel in workforce training

Source: McKinsey Global Institute analysis


The economic potential of generative AI: The next productivity frontier
June 14, 2023 | Report


McKinsey Global Institute
Generative AI and the future of work in America
July 26, 2023 | Report