The Challenges to Applying AI in Industry

Applications of AI in Government and Industry Conference

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ITIF | INFORMATION TECHNOLOGY & INNOVATION FOUNDATION

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Digitalization and AI Transforming Manufacturing

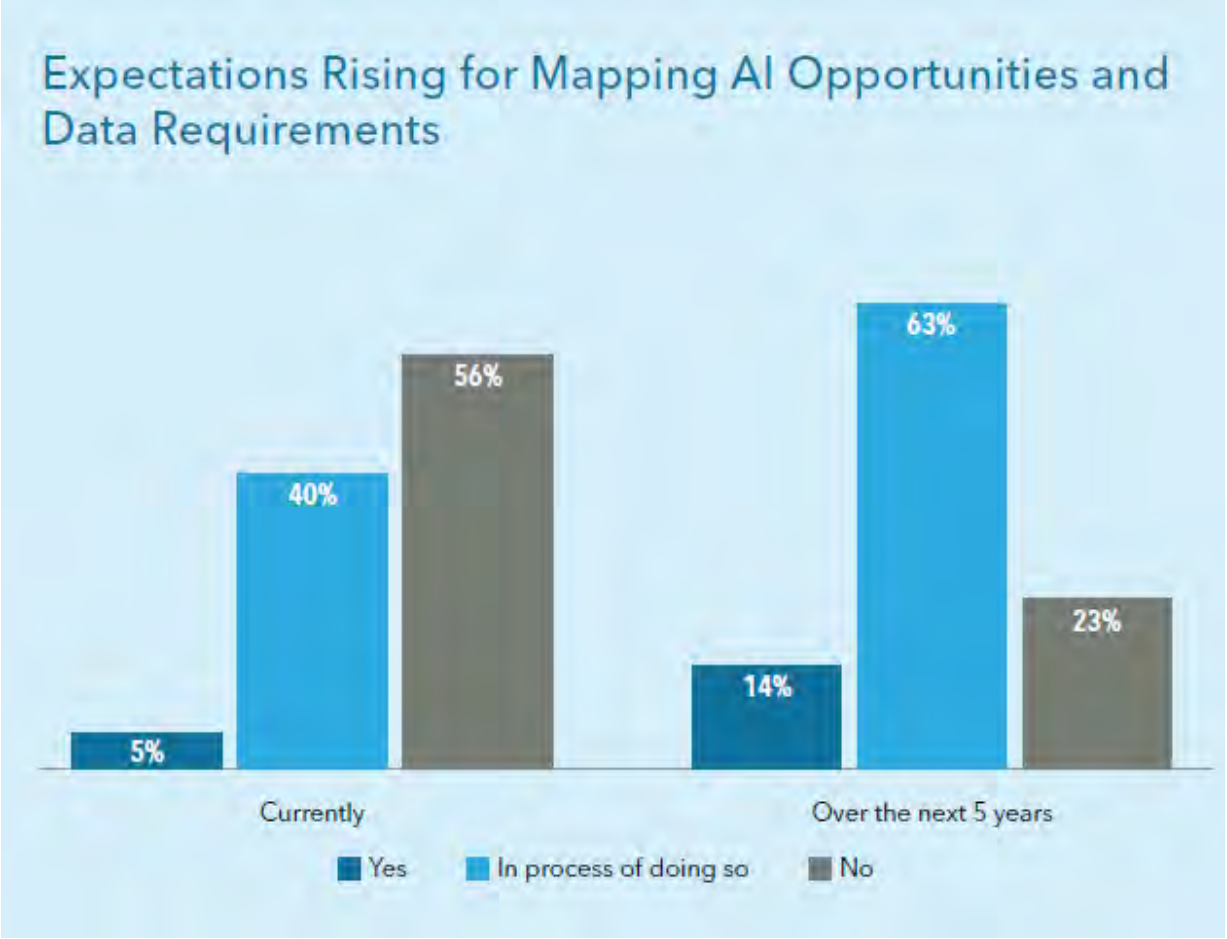
- Digital platforms likely to account for 30% of revenues for "leading manufacturers" by 2020.
- AI will add $13 trillion to the global economy by 2030.
- AI applications expected to contribute one-third of output growth in Germany's manufacturing sector over next five years.

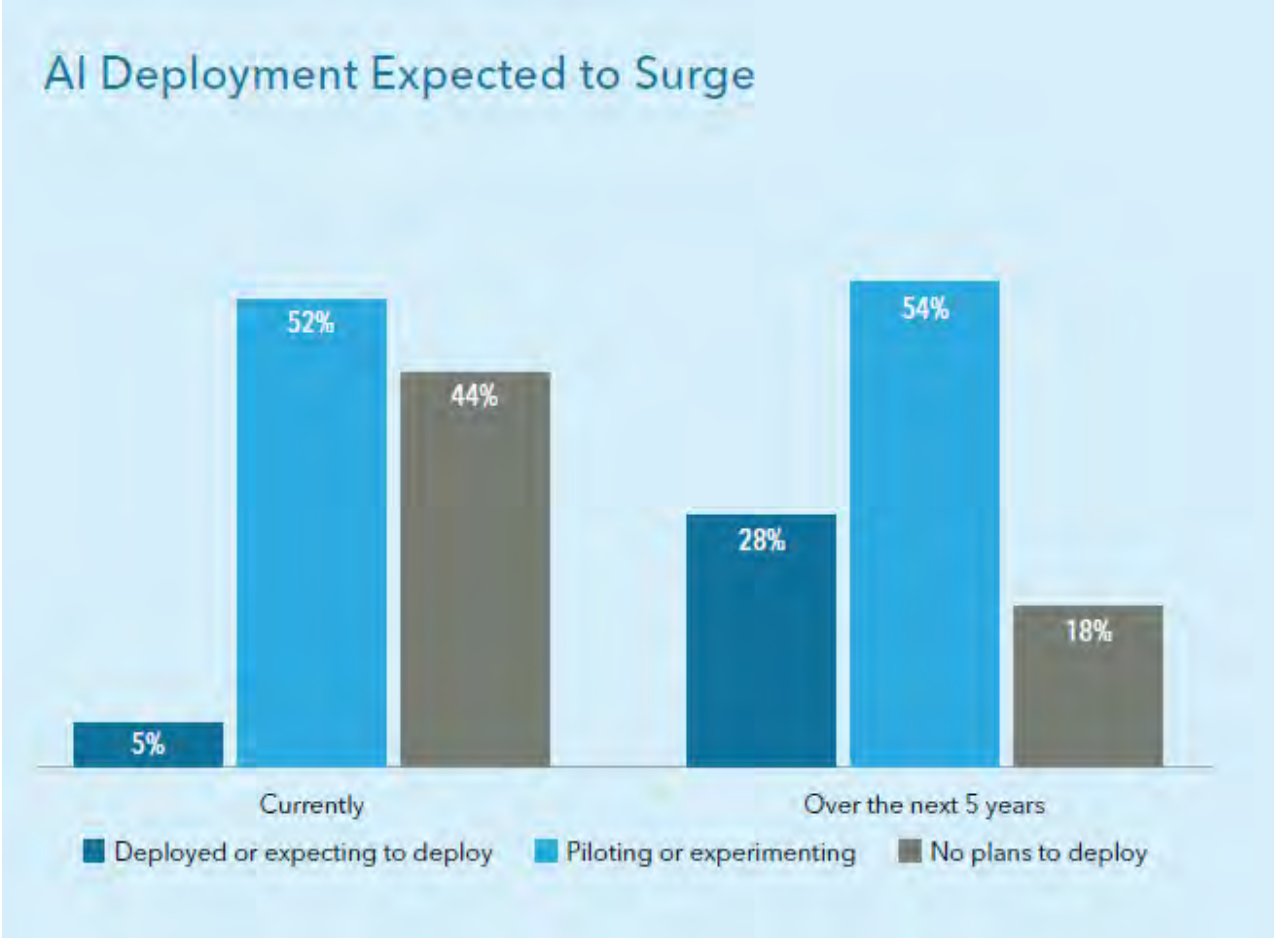
Source: ITIF/MAPI, "The Manufacturing Evolution: How AI Will Transform Manufacturing & The Workforce of the Future"

ITIF/MAPI "The Manufacturing Evolution" Report

- Surveyed AI adoption/challenges among 70 $1-10B manufacturers.

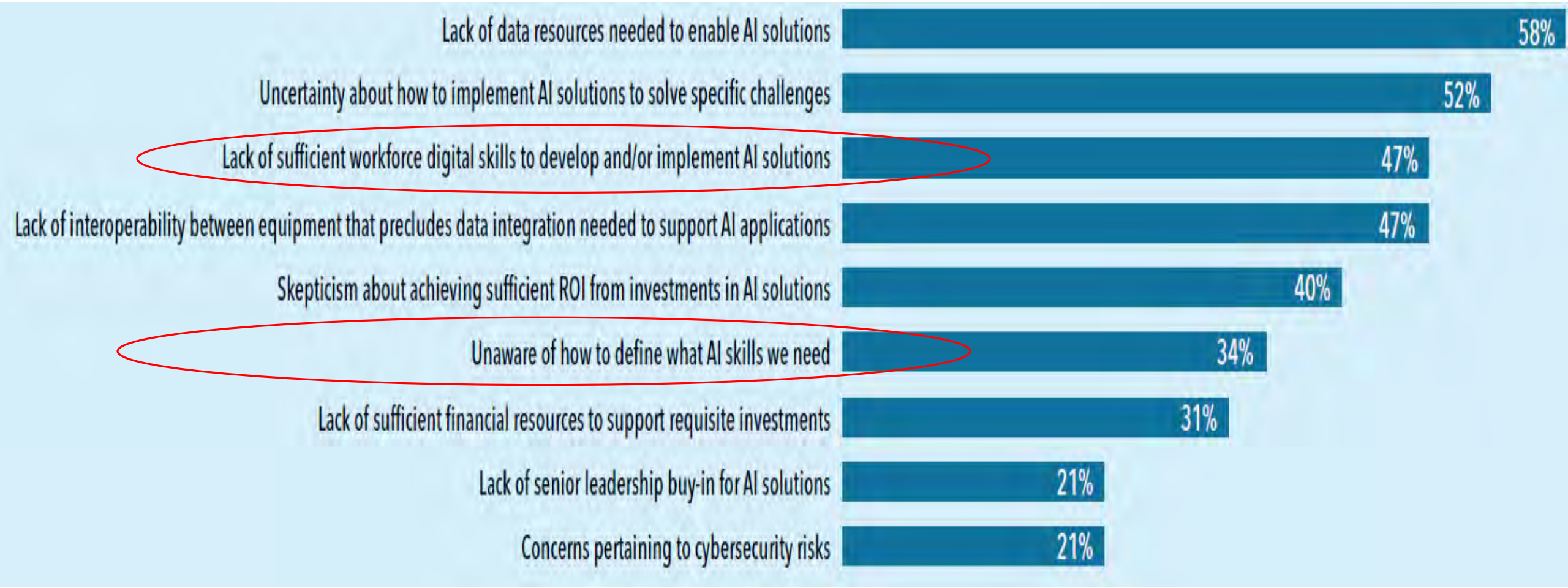
AI Deployment Lagging But Expected to Surge Quickly





Source: ITIF/MAPI, "The Manufacturing Evolution: How AI Will Transform Manufacturing & The Workforce of the Future"

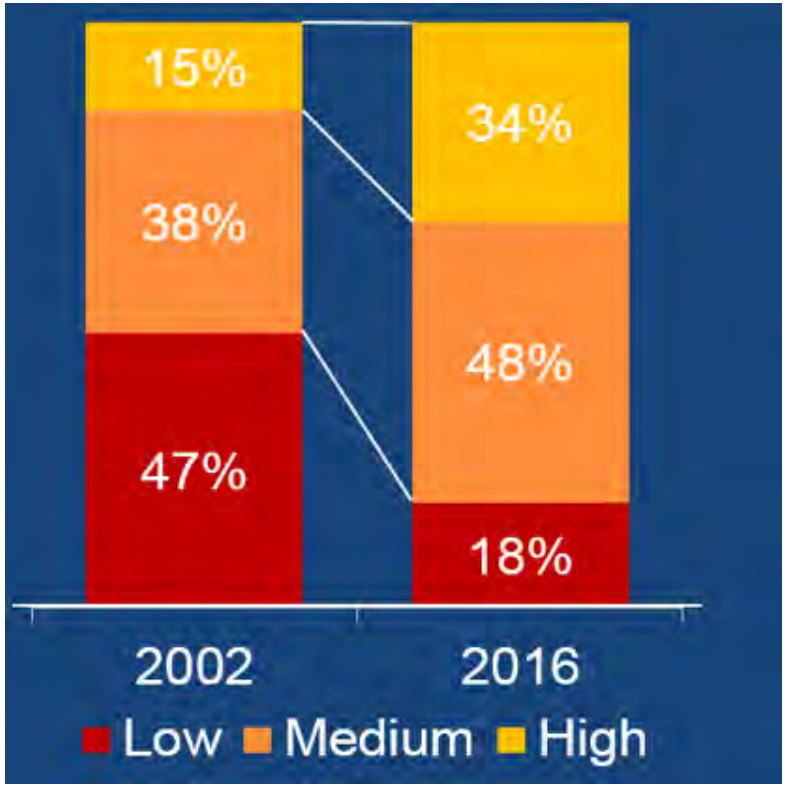
Leading Barriers to AI Adoption Among Manufacturers



Source: ITIF/MAPI, "The Manufacturing Evolution: How AI Will Transform Manufacturing & The Workforce of the Future"

Manufacturing Jobs Increasingly Demand Digital Skills

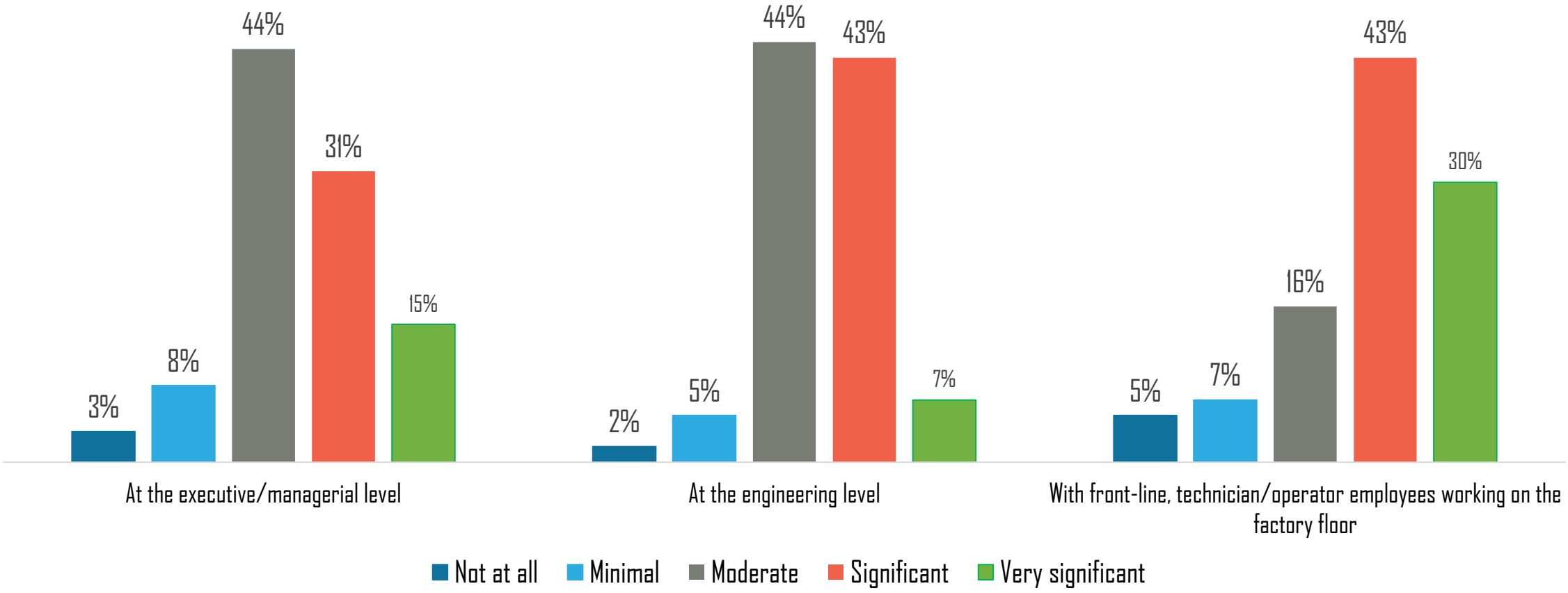
Employment in Advanced Manufacturing
by Digital Skill Level



"82% of U.S. manufacturing jobs require a medium to high digital skill level today."

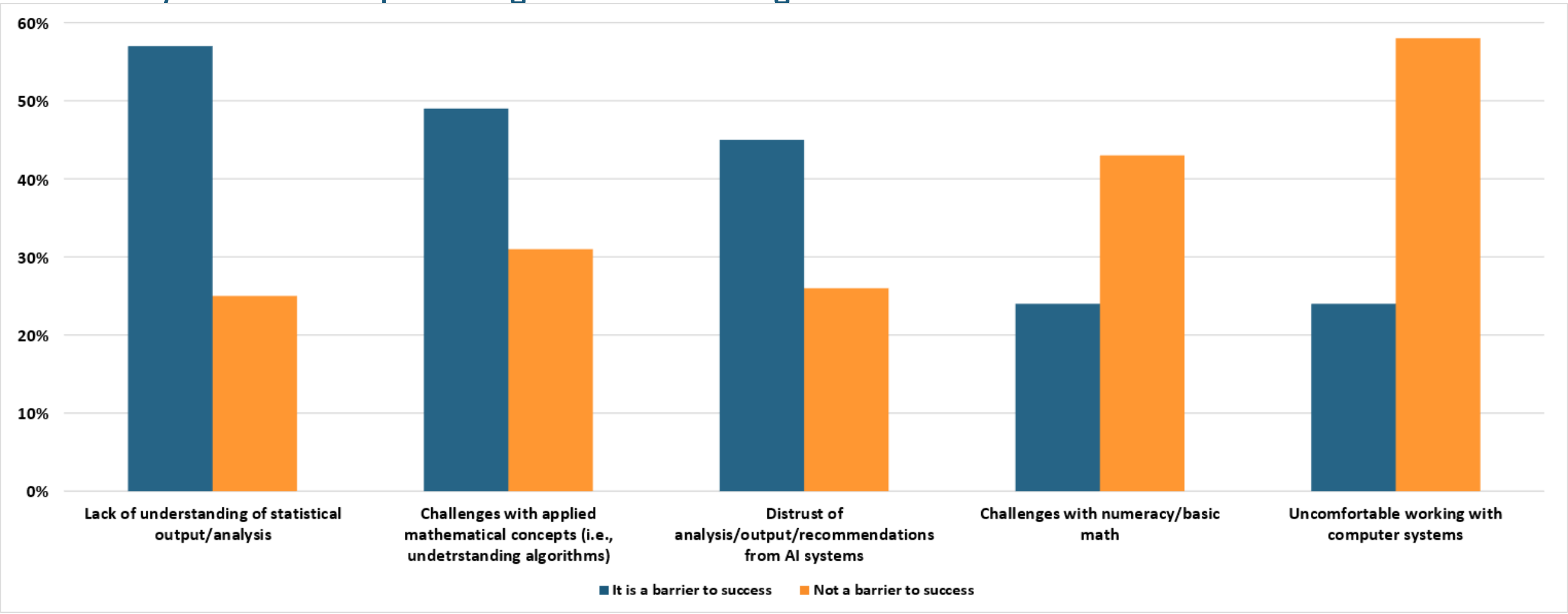
Source: Mark Muro, Sifan Liu, Jacob Whiton, and Siddharth Kulkarni, Brookings Metropolitan Policy Program, "Digitalization and the American Workforce"

AI Skill Gaps Appear Across All Levels of Mfg. Workforce



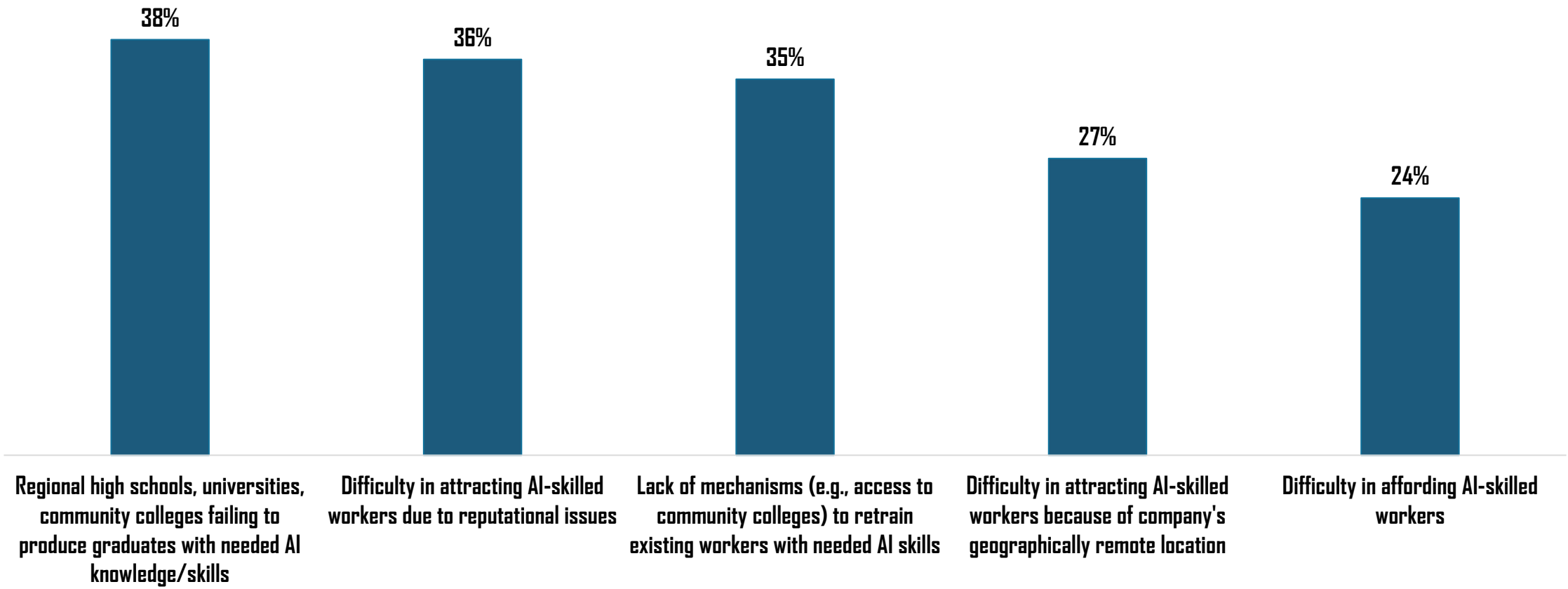
Source: ITIF/MAPI, "The Manufacturing Evolution: How AI Will Transform Manufacturing & The Workforce of the Future"

Key AI Skills Gap Among Front-Line Mfg. Workers



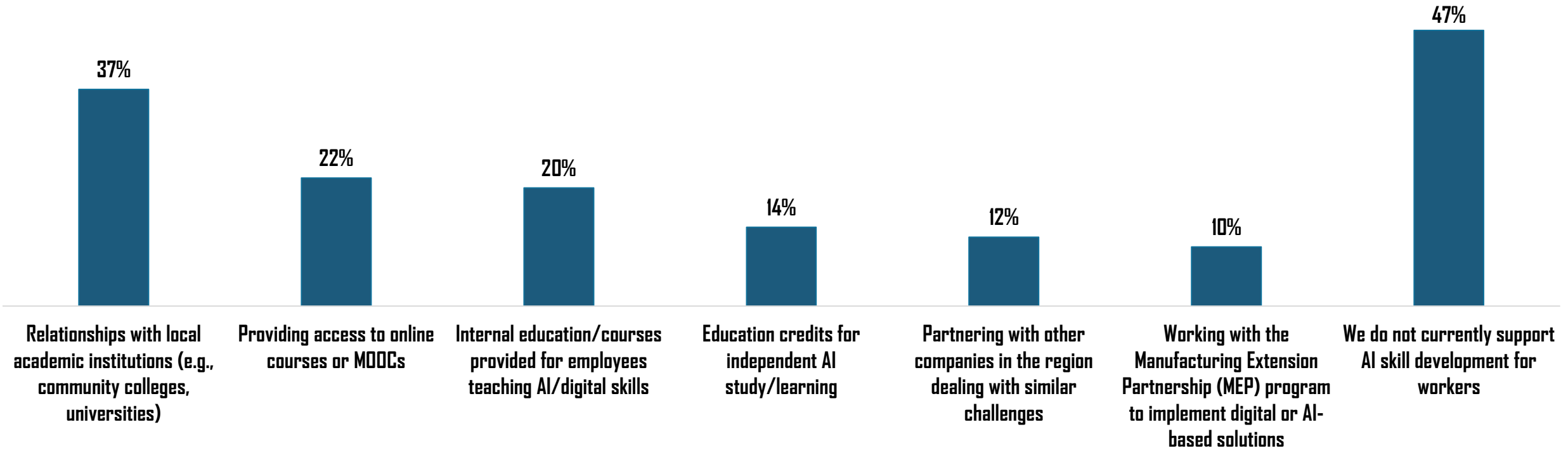
Source: ITIF/MAPI, "The Manufacturing Evolution: How AI Will Transform Manufacturing & The Workforce of the Future"

Barriers In Finding Employees With Requisite AI Skills



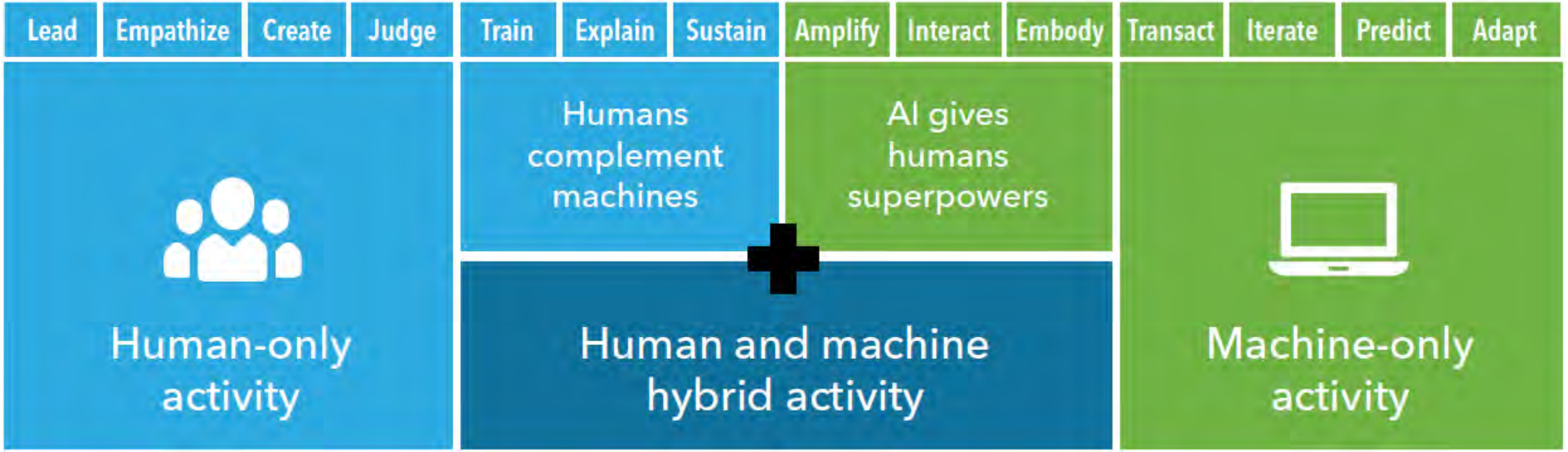
Source: ITIF/MAPI, "The Manufacturing Evolution: How AI Will Transform Manufacturing & The Workforce of the Future"

How Companies Are Cultivating AI Workforce Skills



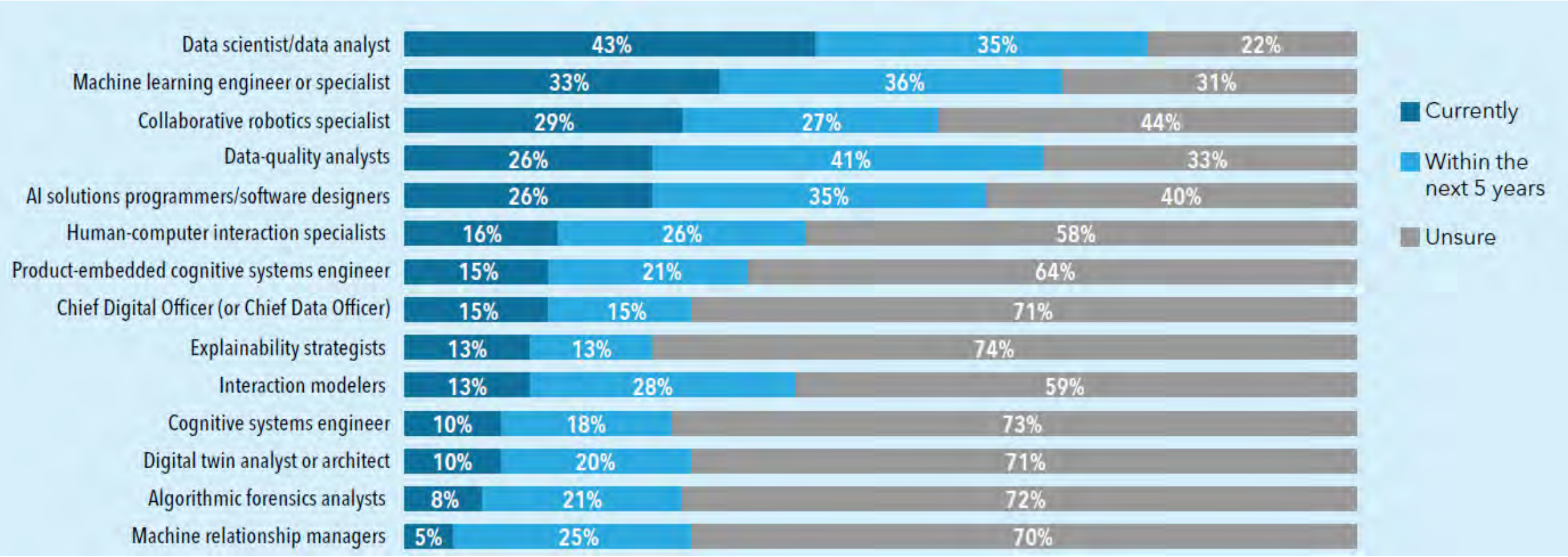
Source: ITIF/MAPI, "The Manufacturing Evolution: How AI Will Transform Manufacturing & The Workforce of the Future"

Role of Humans and Machines in the AI Era



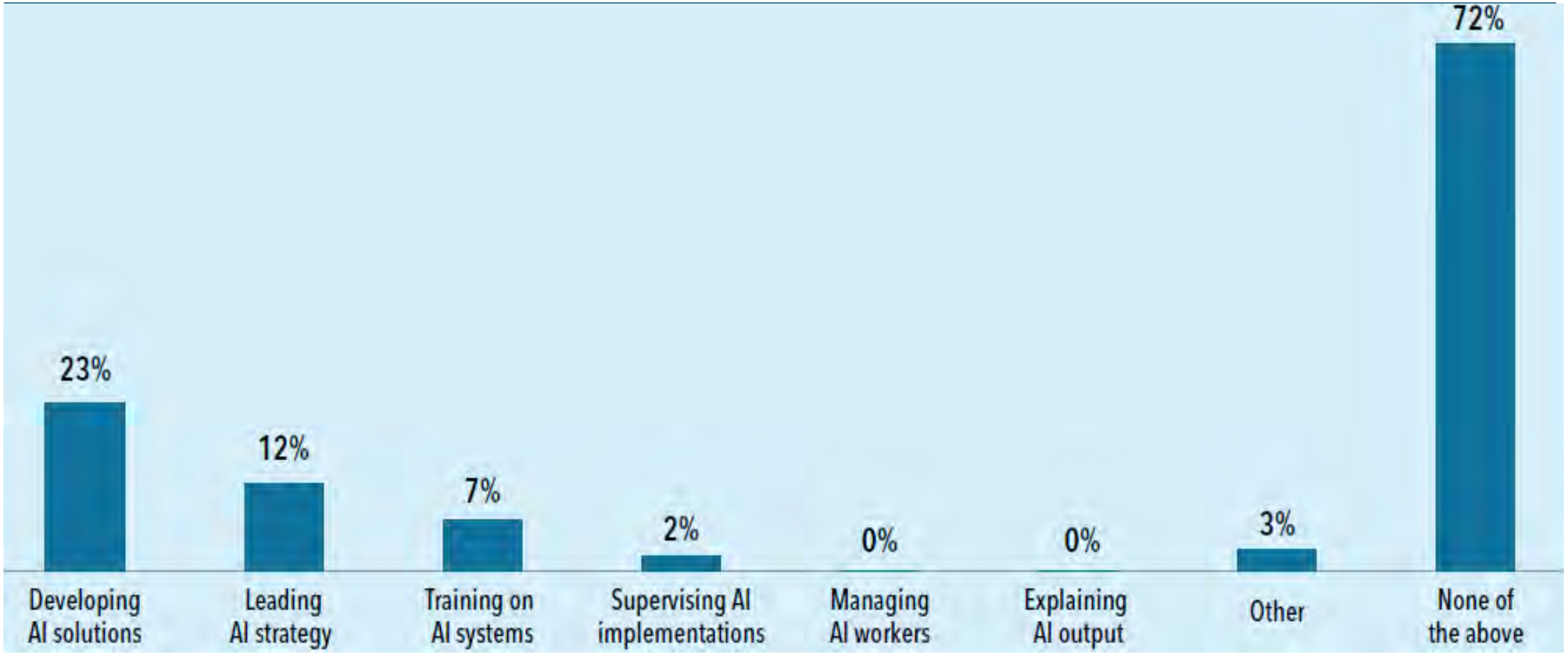
Graphic based on diagram from Daugherty and Wilson, *Human + Machine: Reimagining Work in the Age of AI*

Manufacturers Expecting to Create New AI-Specific Jobs



Source: ITIF/MAPI, "The Manufacturing Evolution: How AI Will Transform Manufacturing & The Workforce of the Future"

Yet Still Early Days For New Types of AI-Related Mfg. Jobs



Source: ITIF/MAPI, "The Manufacturing Evolution: How AI Will Transform Manufacturing & The Workforce of the Future"

Leverage Resources for AI/Digital Mfg. Skills Development

- SME's "Tooling U" MOOC provides 500+ manufacturing technology classes online.
- MxD's "Digital Manufacturing and Design Roles Taxonomy" identifies 165 distinct digital manufacturing and design roles.
- For AI, the Microsoft AI Business School offers education for executives while a Professional Program offers certifications in data science and AI apps development.

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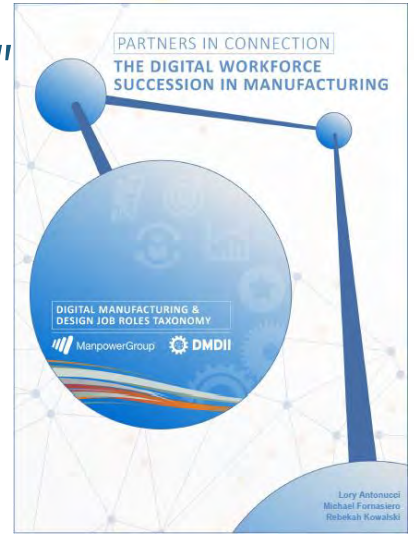

Source: MxD and Manpower Group, "The Digital Workforce Succession in Manufacturing"

Recommendations for Manufacturers to Spur AI Adoption

- ✓ Set clear objectives for digital and AI transformation.
  Microsoft: "Get Connected; Become Predictive; Grow to Be Cognitive."
- ✓ Establish an AI Governing Coalition for the enterprise.
- ✓ Develop an AI workforce transformation strategy, re-evaluating job roles, titles, levels, and pay scales to attract AI talent.
- ✓ Recognize that AI's greatest benefit comes from thoroughly reimagining existing business processes and operations.

Source: ITIF/MAPI, "The Manufacturing Evolution: How AI Will Transform Manufacturing & The Workforce of the Future"

Recommendations to Spur AI Development in the United States

- Congress should pass the Artificial Intelligence Initiative Act.
- U.S. should commit to a massive expansion of U.S. AI talent.
  - E.g., Create NSF AI fellowship program with 1K CS graduates annually.
- Fund a national AI economic development competition enabling states to compete for funds.
- Smooth workforce transitions (e.g., expand Section 127 tax credit).
- Don't resist AI/automation due to employment concerns.

Thank You!

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