

Generative AI and the Workforce

LMI Tuesdays
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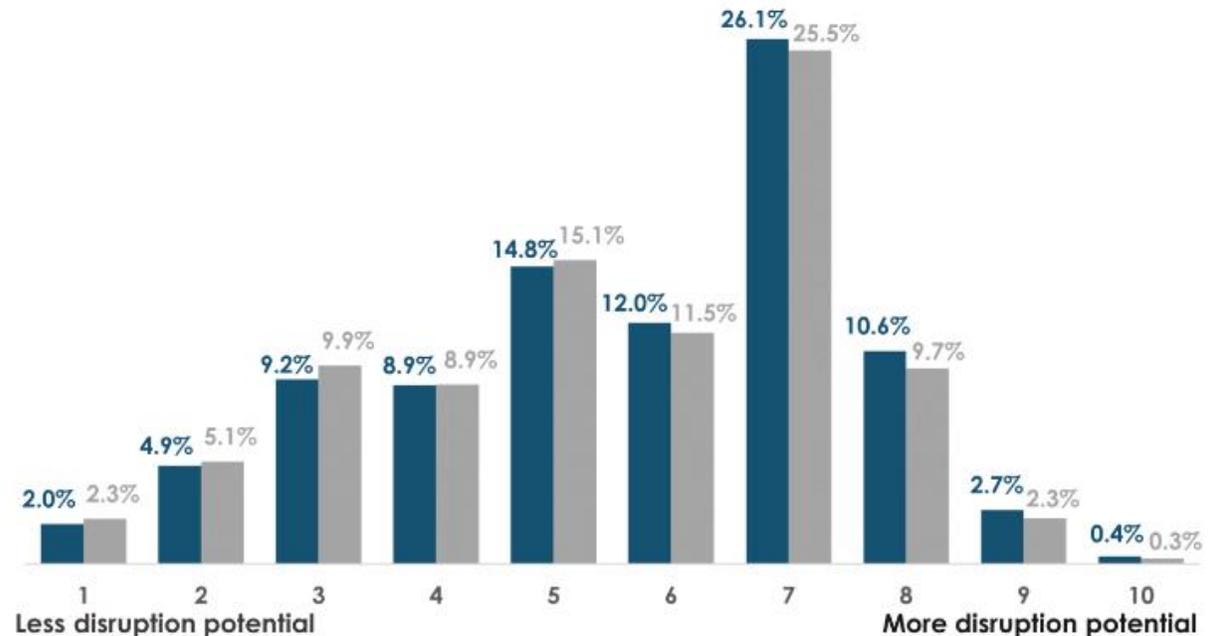


LEAD's Previous Research on Automation

- LMI Institutes' Automation Index
- Jobs highly exposed to Automation tend to:
 - Be physical and routine
 - Pay mid-lower wage
 - Require less education
 - Have a higher share of men

FIGURE 1: **North Carolina** has a higher share of jobs exposed to automation-related disruption than the **United States**

Share of total employment by automation disruption potential category



SOURCE: Authors' Analysis of LMI Institute and Bureau of Labor Statistics Occupational Employment and Wage Statistics Data

AI vs Automation



AI can be involved in automation

	AI	Automation
Scope	Simulate human-like intelligence	Replace manual, repetitive tasks
Goal	Concerned with developing intelligent systems using techniques like machine learning, natural language processing, and computer vision.	Concerned with task execution and reducing human effort using software, machinery, or robotic systems to perform specific tasks.
Flexibility/Adaptability	Designed to be flexible and adaptable . They can learn from new data, generalize knowledge across domains, and perform a wide range of tasks within their capabilities.	Follows predefined rules or instructions and does not possess the flexibility to handle tasks outside of its defined scope.
Human Interaction	AI systems are designed to interact with humans and understand natural language, context, and intent. They can converse, understand user queries, and provide appropriate responses.	Automation systems are typically designed to operate in a predefined manner without significant human interaction . They are often task-oriented and follow a set of instructions or rules.
Level of Autonomy	Can exhibit varying levels of autonomy , ranging from limited autonomy in narrow AI systems to higher autonomy in more advanced AI systems.	Operate under predefined rules or instructions and do not possess the ability to make decisions autonomously .

What is Generative AI?

Type of artificial intelligence that can create **new content**

Text	
Voice	
Image	
Speech	
Code	
Video	
Data	

ChatGPT

- OpenAI launched ChatGPT in Nov 2022
- Improvements from previous technology:
 - Conversational
 - Broad knowledge base
 - Versatility in Applications
- User-friendly and widely accessible



ChatGPT reached 100 million users in 60 days



Limitations of Generative AI

Quality of Generated Outputs

May not produce high-quality outputs, and the generated outputs **may contain errors or hallucinations**.

Control Over Generated Outputs

Can generate outputs that are like, but not identical to, the input data. May give different responses to the same prompt; thus, **reproducibility may be an issue**.

Bias and Fairness

Can **replicate biases** present in the training data. This can lead to unfair or discriminatory results, particularly if the training data contains biased information.

Interpretability

Models are complex and often opaque, making it **difficult to understand how predictions are made**.

Safety and Security

Can be used to generate convincing **fake images, videos, and text**, which can be used to spread misinformation. **Data privacy may also be a concern**.



Use Case #1

How customer operations could be transformed

[The economic potential of generative AI: The next productivity frontier](#)
[McKinsey 2023](#)



Customer self-service interactions

Customer interacts with a humanlike chatbot that delivers immediate, personalized responses to complex inquiries, ensuring a consistent brand voice regardless of customer language or location.

Customer-agent interactions

Human agent uses AI-developed call scripts and receives real-time assistance and suggestions for responses during phone conversations, instantly accessing relevant customer data for tailored and real-time information delivery.



Agent self-improvement

Agent receives a summarization of the conversation in a few succinct points to create a record of customer complaints and actions taken.

Agent uses automated, personalized insights generated by AI, including tailored follow-up messages or personalized coaching suggestions.



How software engineering could be transformed

[The economic potential of generative AI: The next productivity frontier](#)
[McKinsey 2023](#)



Inception and planning

Software engineers and product managers use generative AI to assist in analyzing, cleaning, and labeling large volumes of data, such as user feedback, market trends, and existing system logs.

System design

Engineers use generative AI to create multiple IT architecture designs and iterate on the potential configurations, accelerating system design, and allowing faster time to market.



Coding

Engineers are assisted by AI tools that can code, reducing development time by assisting with drafts, rapidly finding prompts, and serving as an easily navigable knowledge base.

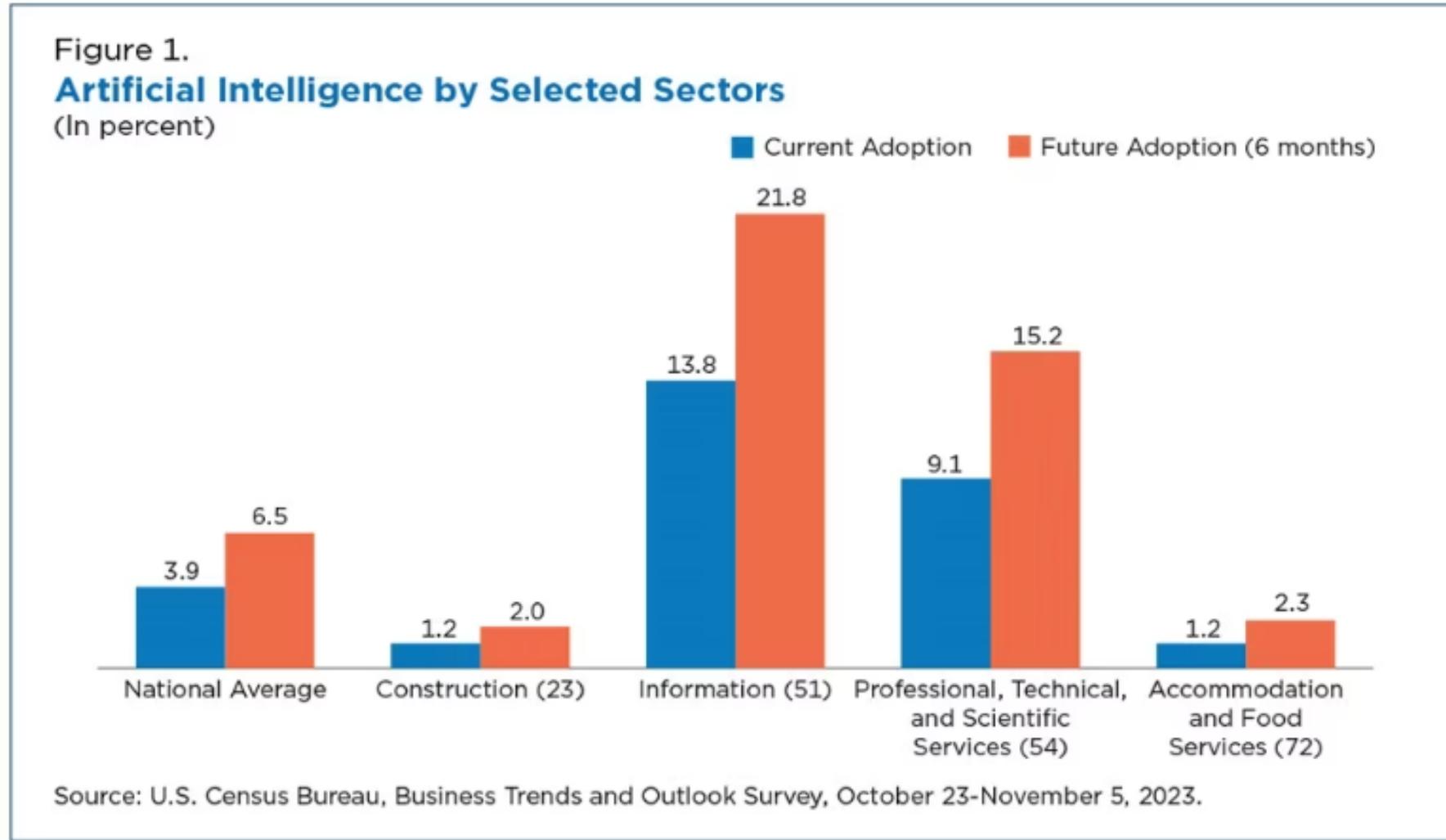


Testing

Engineers employ algorithms that can enhance functional and performance testing to ensure quality and can generate test cases and test data automatically.



Adoption of AI in the U.S.



What Occupations May Be Exposed to AI?

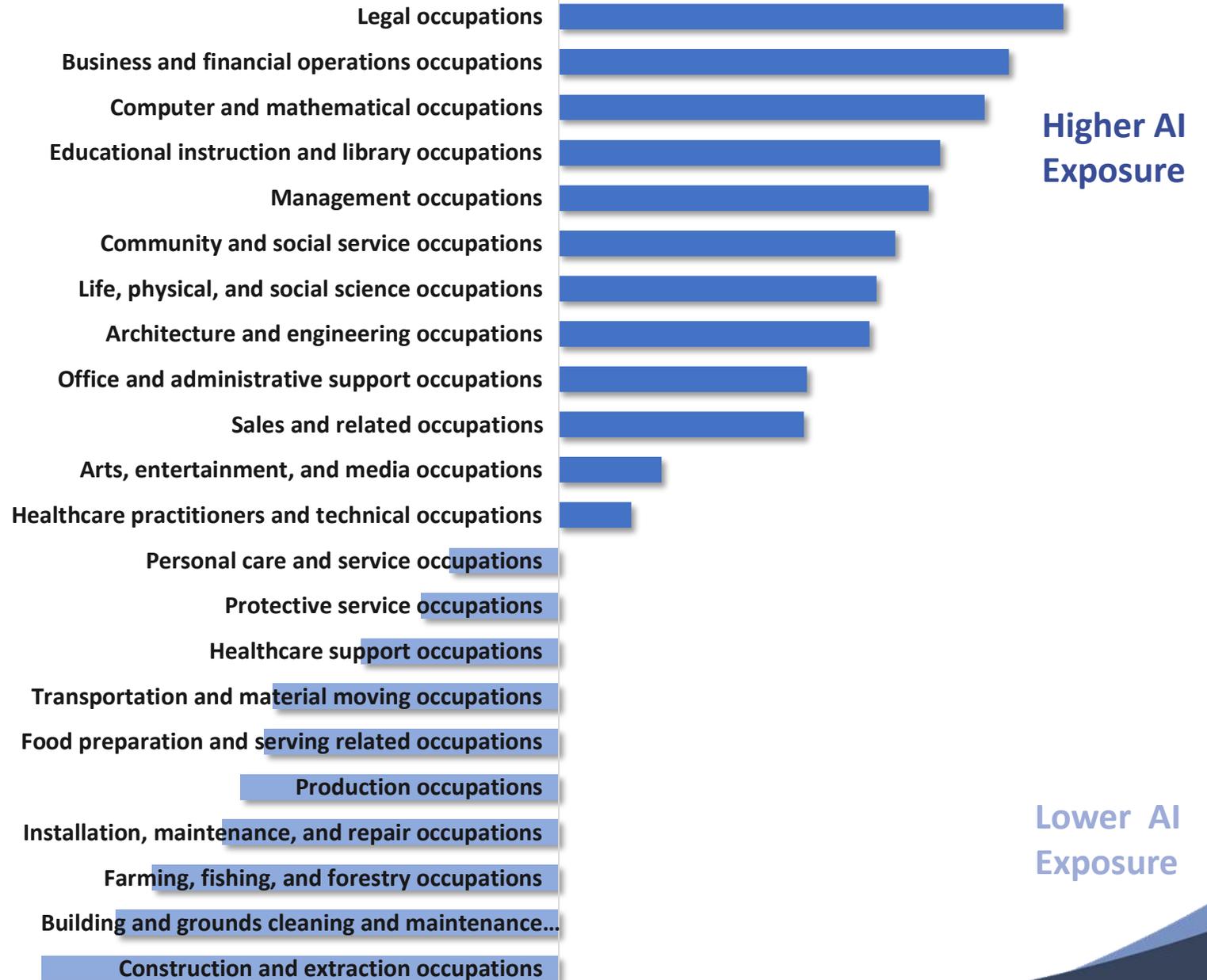
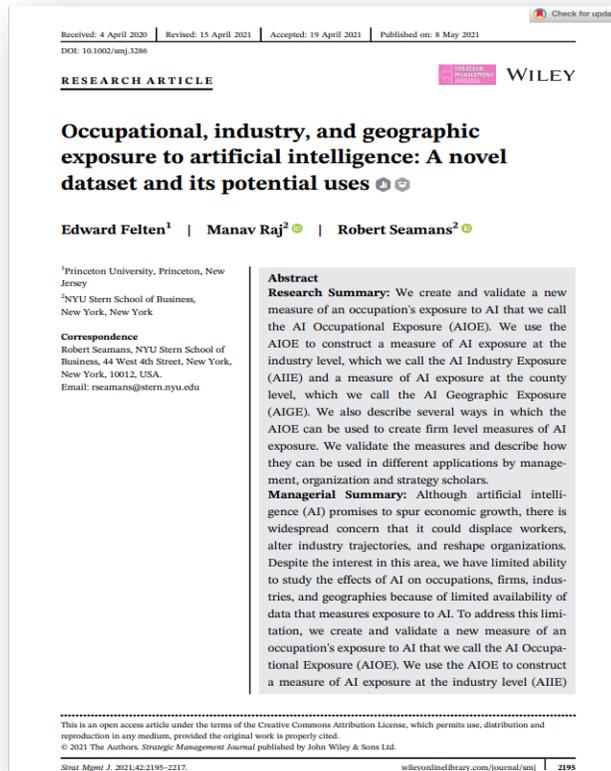


Common Results

- Little to no impact on physical and/or outdoor occupations
- AI may impact more white-collar jobs that:
 - Pay more
 - Require more education
 - Have a higher share of women



AI Occupational Exposure (AIOE)



AIOE vs Complementarity

Figure 1: AI exposure and Complementarity Diagram

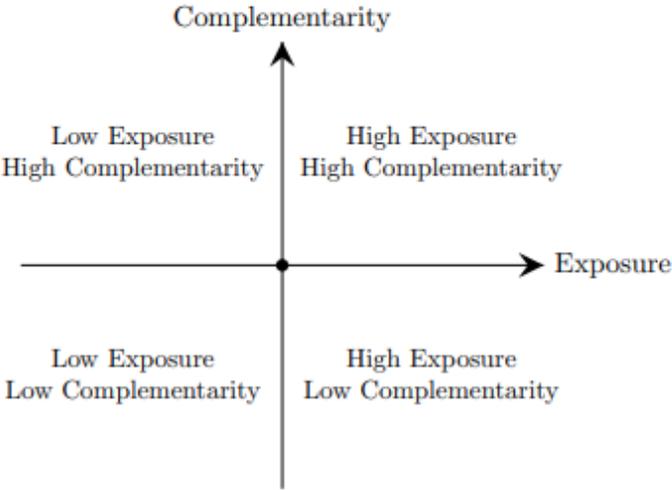
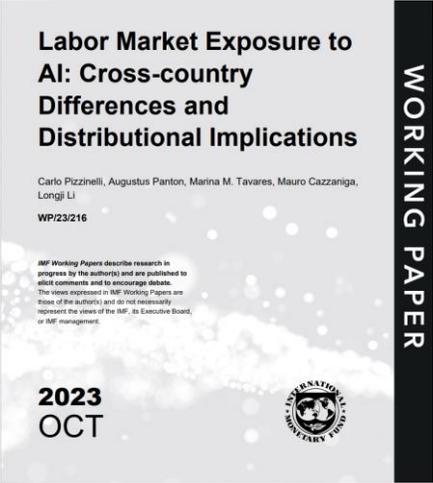
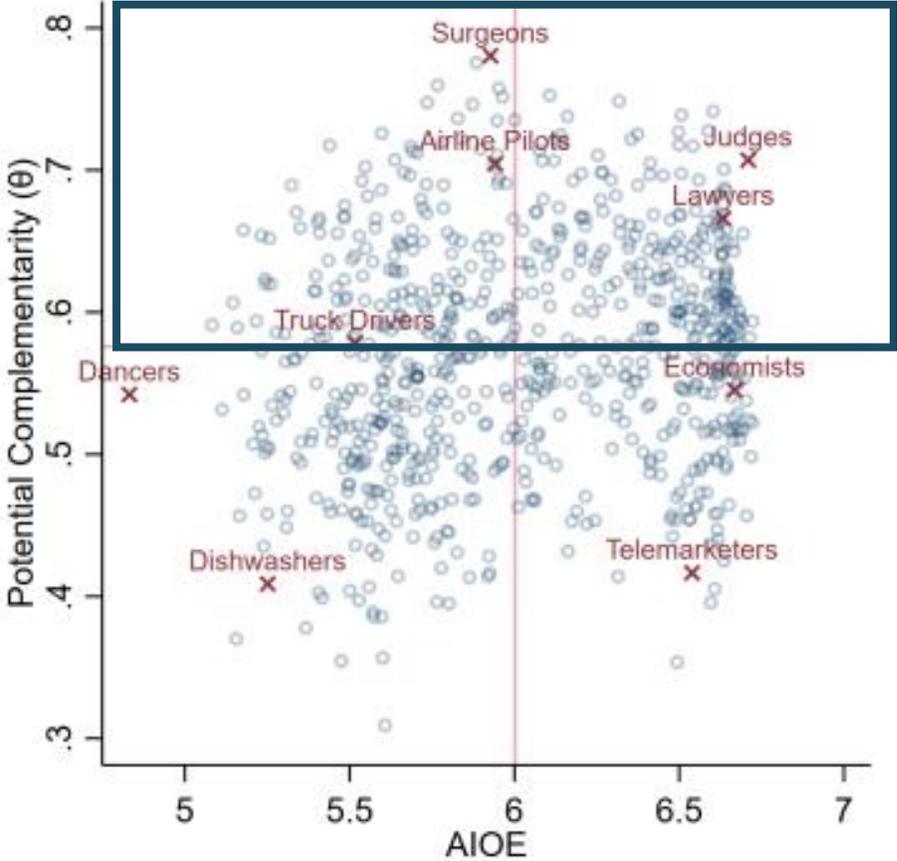


Figure 2: AI Exposure (AIOE) and Potential Complementarity



AI May Create *NEW* Jobs

- Trainers – developing AI
 - AI Engineers, scientists
- Explainers – making AI easy to use
 - AI UX designers
- Sustainers – making sure AI is used optimally
 - AI content creators, data curators, ethics and government specialists



AI May Increase Productivity

- Research shows AI can improve productivity on a variety of tasks, like:
 - Business Writing (Noy & Zhang 2023)
 - Programming (Peng et al 2023)
 - Customer Support (Brynjolfsonn et al 2023)
 - Consulting (Dell'Acqua et al 2023)
- Stronger benefits to less experienced, lower skilled workers



Summary

- ✓ AI is different from traditional automation
- ✓ AI has the potential to impact more white collar jobs
- ✓ AI can be used to complement jobs (AI Assistants)
- ✓ AI may increase worker productivity, particularly for less experienced workers



Stay Tuned!

LEAD will continue to research and share information on AI and the workforce



Thank you!

Questions, Comments?

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