

# **AI Task Force:** ***Implications for Maine's Workforce***

April 11, 2025

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# Preview

There are two primary channels through which generative Artificial Intelligence (AI) could impact the labor market:

- 1) **Productivity enhancement** – AI used by workers or teams to increase output, automating/assisting with lower value tasks and enabling workers to spend more time on higher value tasks
- 2) **Task displacement** – AI used to automate tasks that previously had been labor intensive, therefore reducing demand for workers in specific occupations

Predicted impacts of AI on jobs and the economy (growth rates, net job impact, inequality) vary widely.

Compared to past waves of automation that:

- Largely affected manual production tasks
- Displaced middle income jobs (typically not requiring college education)
- Were concentrated in specific industries and geographic areas (plant/mill closure)

AI's impact could be much more diffuse:

- Across industries, areas and jobs of varying skill and educational requirements

# **Section 1: Assessing AI potential and Maine's workforce data**

# Labor Market Impact of Generative AI

Several studies have considered the impact of AI on labor markets by assessing which tasks these models can perform, and:

- which occupations involve responsibilities including those tasks
- the demographic characteristics, geographic distribution and educational attainment of workers in those occupations

One of the most prominent studies, Eloundou et al. (2024), finds that:

- 19 percent of U.S. jobs might see 50 percent or more of their tasks performed/facilitated by AI
- 15 percent of all job tasks in the U.S. could be completed significantly more quickly using AI tools with no impact on quality of work

See: [\*GPTs are GPTs: An early look at the labor market impact potential of large language models\*](#)

[\*Generative AI, the American worker, and the future of work\*](#)

[\*Occupational Exposure to AI by Geography and Education\*](#)

# Measuring Occupational AI Potential

Eloundou et al. (2024) use the [O\\*Net database](#) of occupational task composition and define exposure to/potential use of AI as follows:

“...we define exposure as a measure of whether access to an LLM [Large Language Model] or LLM-powered system would ***reduce the time required for a human to perform a specific DWA*** [Detailed Worker Activity] or ***complete a task by at least 50 percent....while maintaining consistent quality.***”

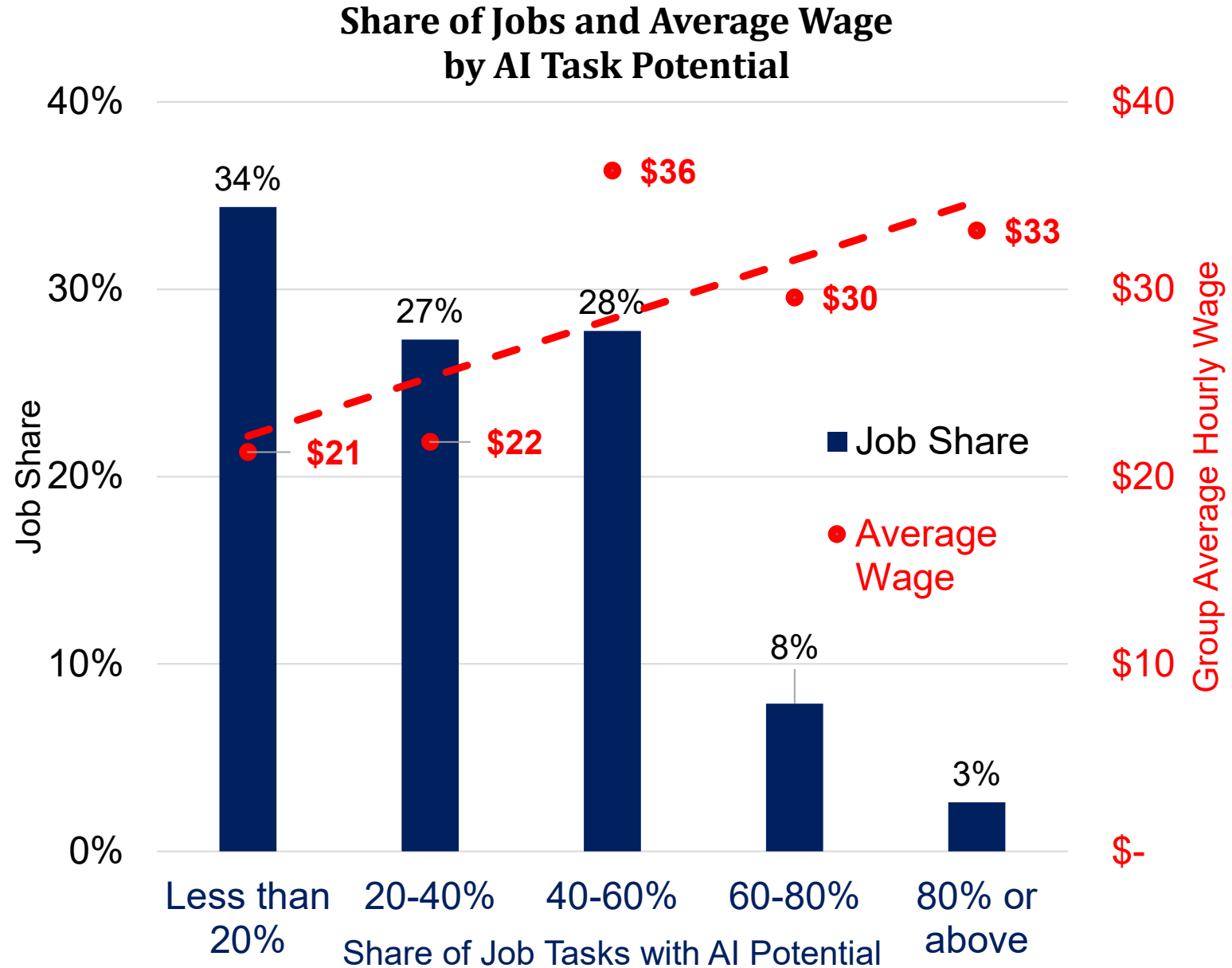
The first section of this report links Maine [Occupational Employment and Wage Statistics](#) (OEWS) to measures of occupational task composition and the potential for AI to facilitate and/or automate those tasks.

## Jobs with the highest potential AI impact have high average wages

About 11 percent of jobs are in occupations in which 60+ percent of tasks may be impacted by AI. These are among the highest paying jobs, averaging \$30-33 per hour, many of which require a degree or other post-secondary education.

About 62 percent of jobs are in occupations in which less than 40 percent of tasks may be impacted by AI. These are among the lowest paying jobs, averaging \$21-22 per hour, most of which do not require a degree or other post-secondary ed.

28 percent of jobs are in occupations in which close to half of tasks may be impacted by AI. These jobs average \$36 per hour.

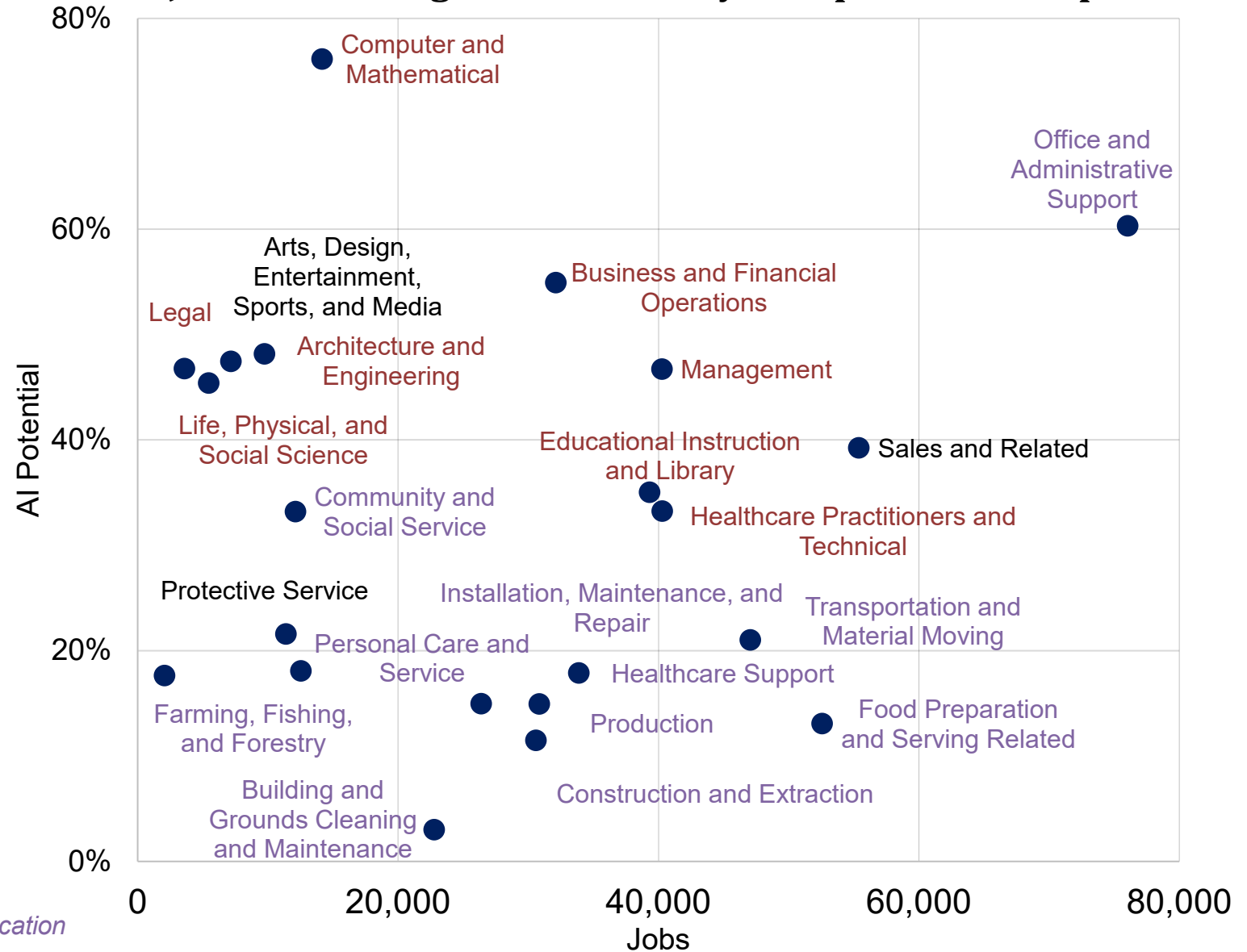


## The most job impact is expected in administrative support jobs

Jobs with the highest share of AI impacted tasks generally are professional and administrative support-related. Computer and mathematical jobs have highest share of tasks; the highest number of jobs are in administrative support occupations.

Jobs in manual labor-related occupations – production, construction, maintenance, farming, and food preparation – have the lowest share of AI impacted tasks.

### Jobs and Average AI Potential by Occupational Group



*Most jobs in these occupations require post-secondary education*

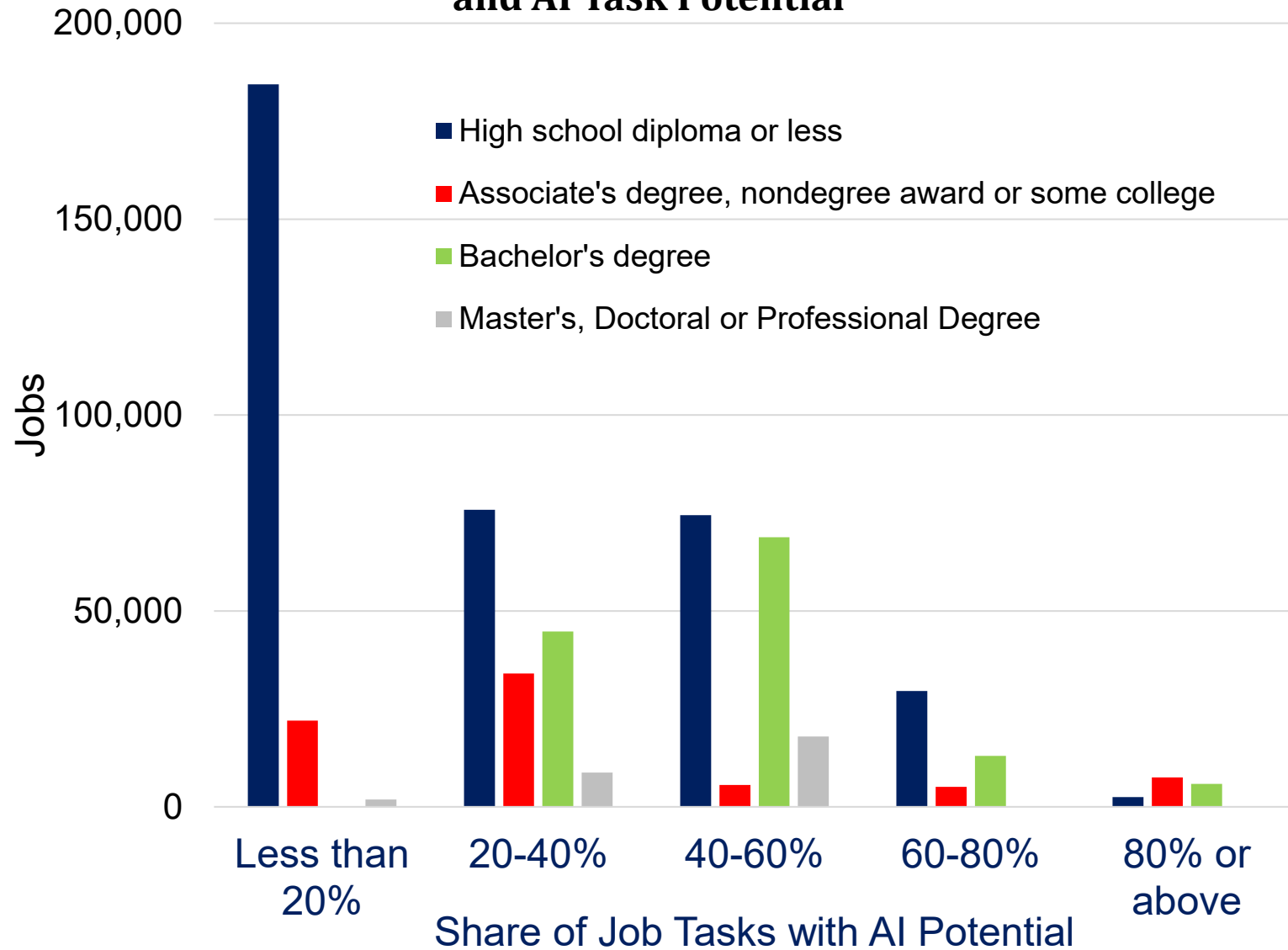
*Most jobs in these occupations do not require post-secondary education*

*Educational requirements in these occupations vary*

## Jobs with low AI potential mostly do not require post-secondary education

Many jobs with more tasks having AI potential impact require post-secondary education; many too are administrative or customer support related that do not require a post-secondary degree.

### Jobs by Typical Education Required and AI Task Potential

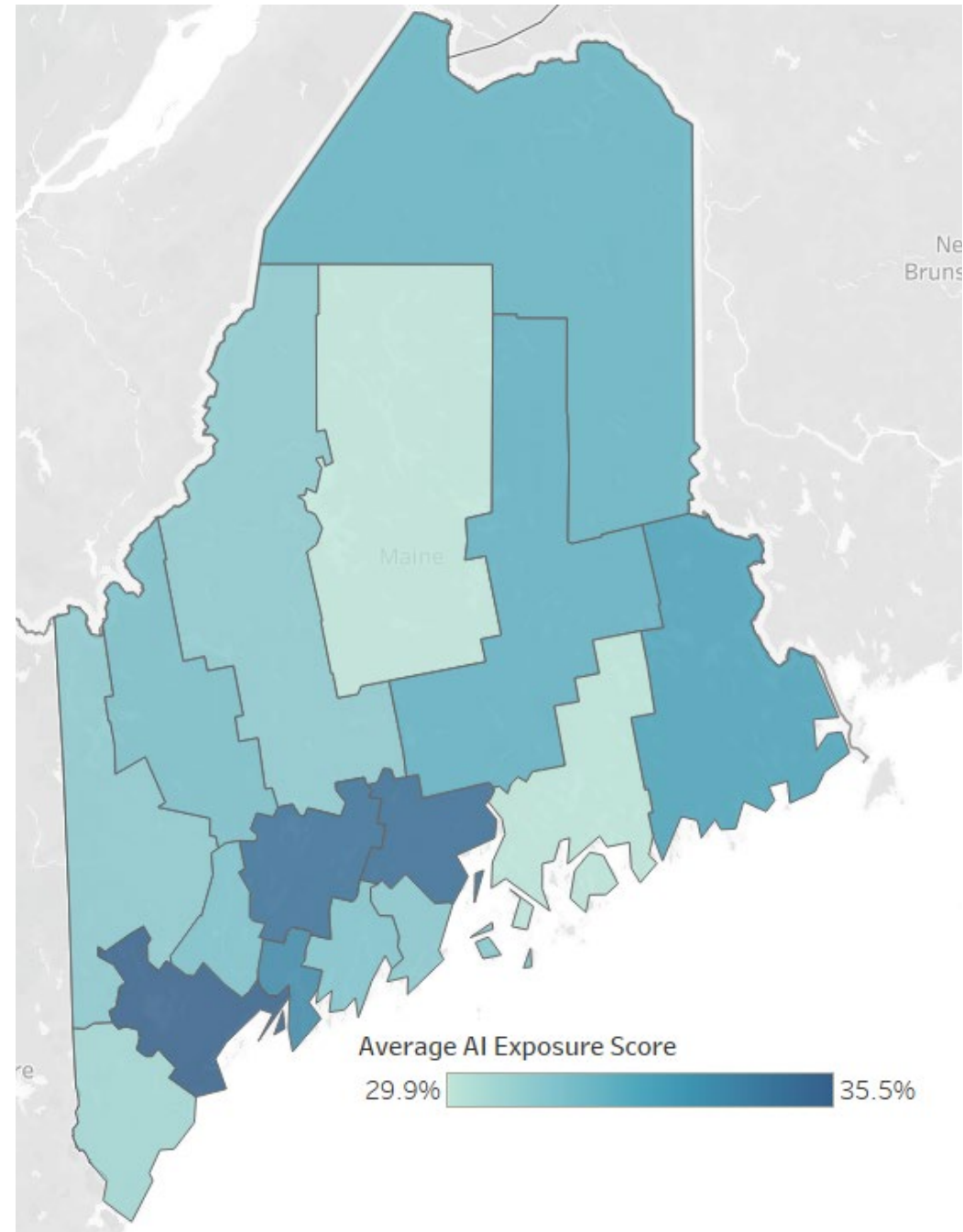




## AI Impact is likely to be greatest in the southern coastal region

The potential impact varies from 30 to 36 percent of jobs among counties.

The overall variation in potential use of AI is quite small across counties.



# Skills and AI Potential

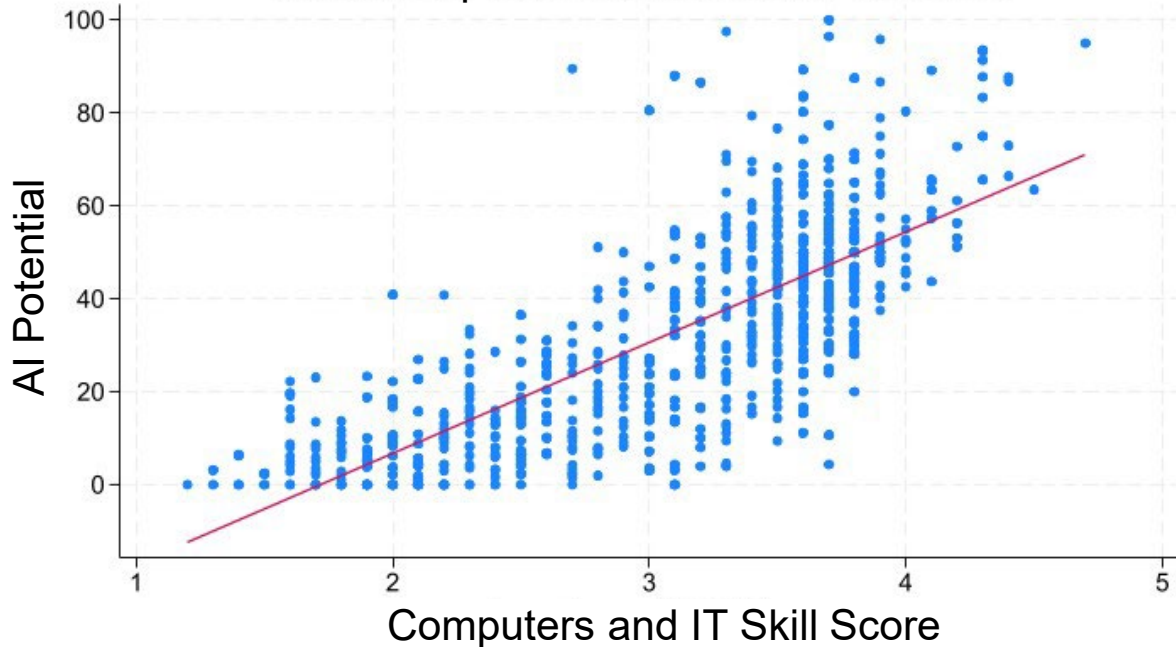
The [U.S. Bureau of Labor Statistics defines skill](#) as a capacity that is developed (through education, training, experience), general (applicable across many occupations), applied (action oriented), and work related (to performance at work)

The following three slides document the relationship between the relative importance of each skill category to each occupation and the potential use of AI in tasks typically performed in that occupation [Eloundou et. al (2023)]

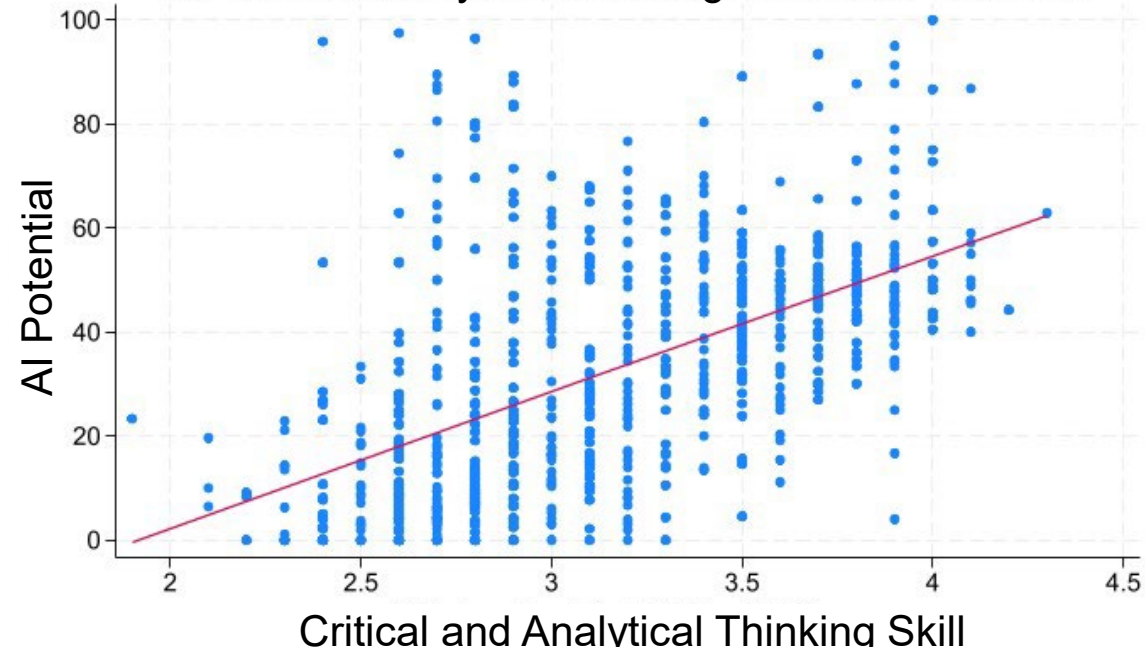
Of the 17 skill categories:

- 4 are strongly positively correlated (Computer/IT, Analysis/Critical Thinking, Problem Solving/Decision Making, Writing/Reading)
- 3 are strongly negatively correlated (Mechanical, Fine Motor, Physical)
- the relationship is less clear for the rest

Computers/IT and AI Potential



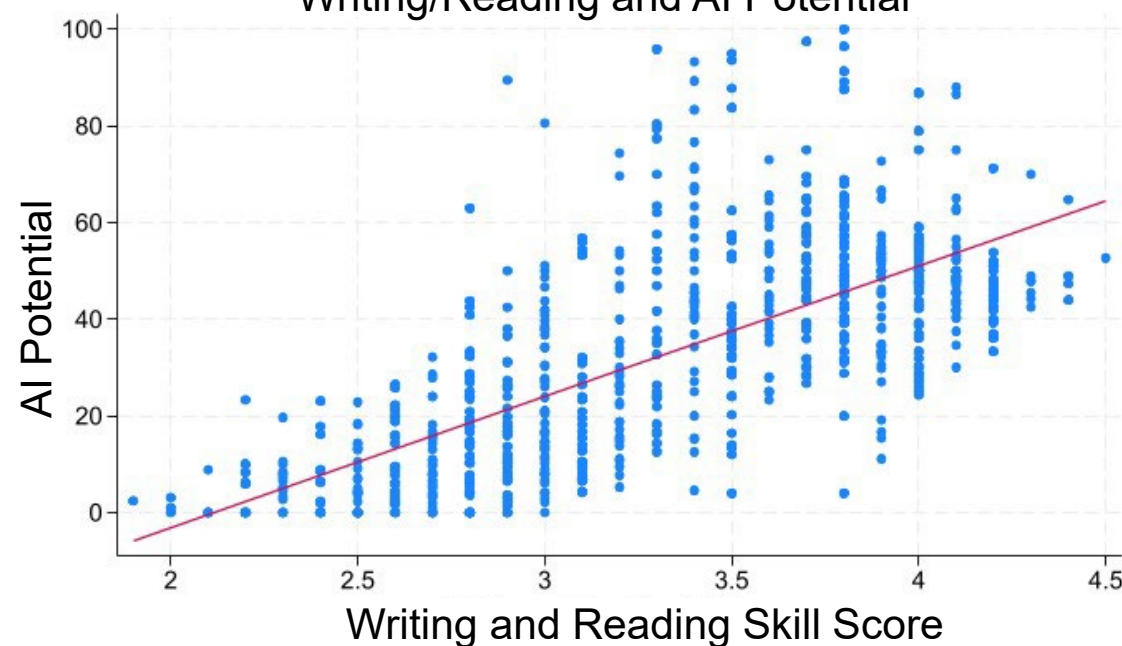
Critical/Analytical Thinking and AI Potential



Problem Solving/Decision-Making and AI Potential

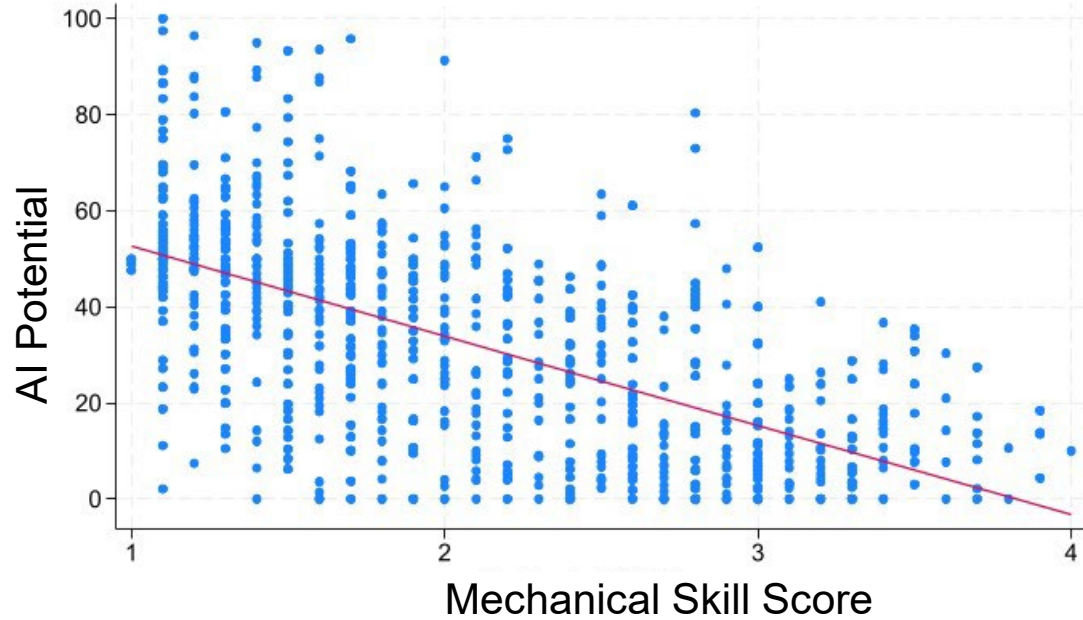


Writing/Reading and AI Potential

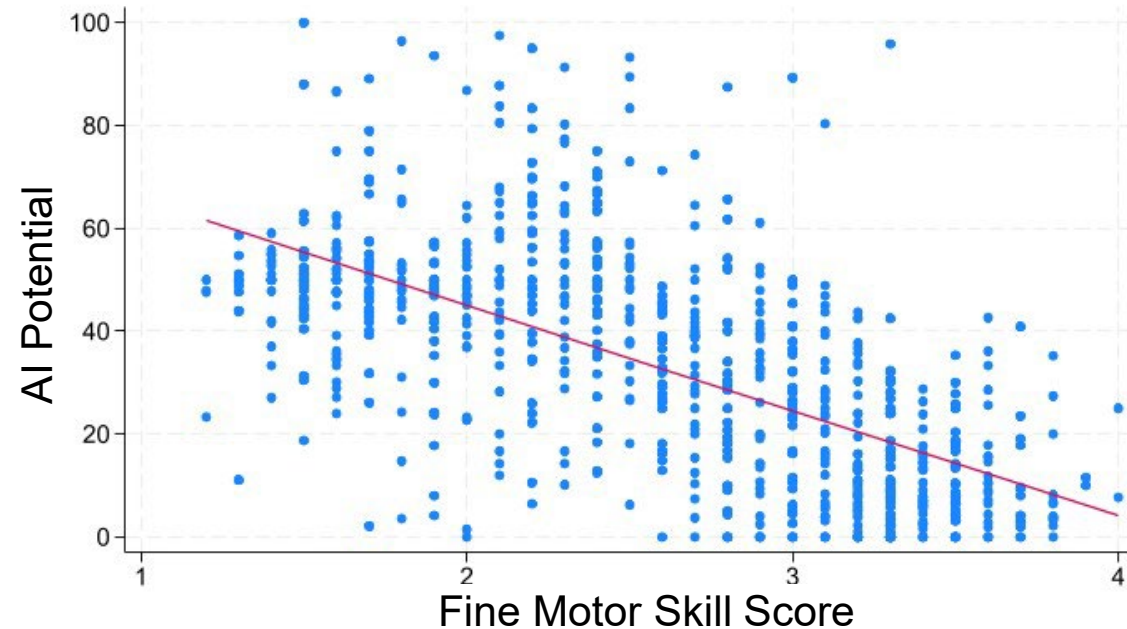




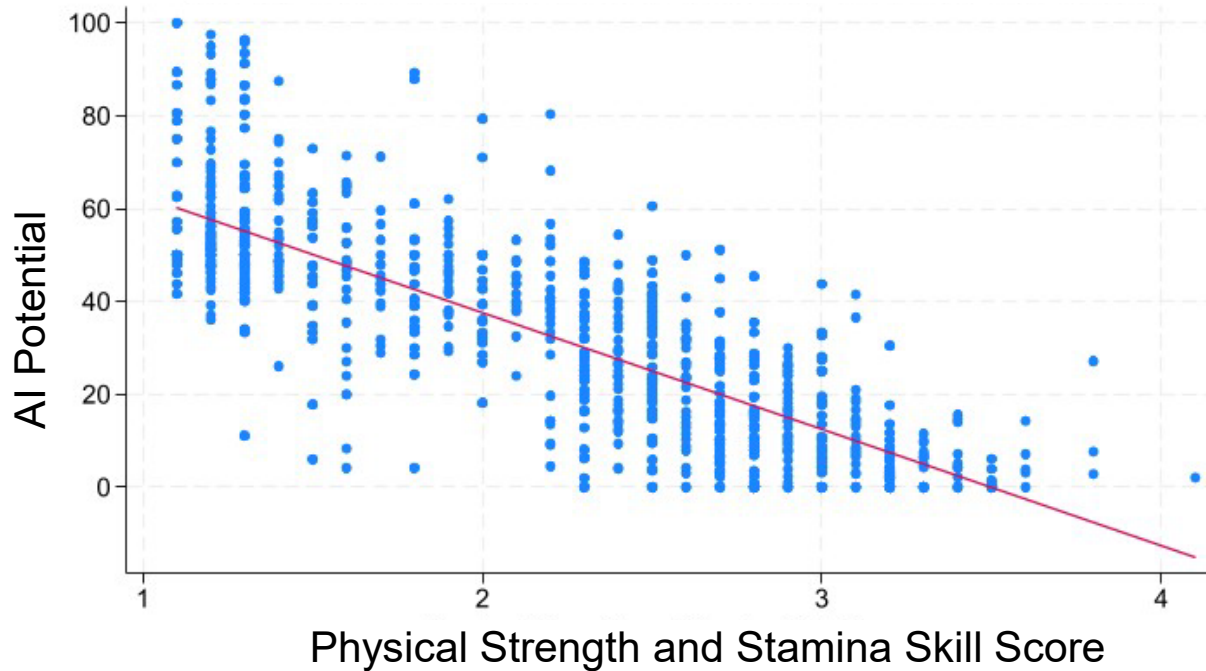
### Mechanical Skill and AI Potential



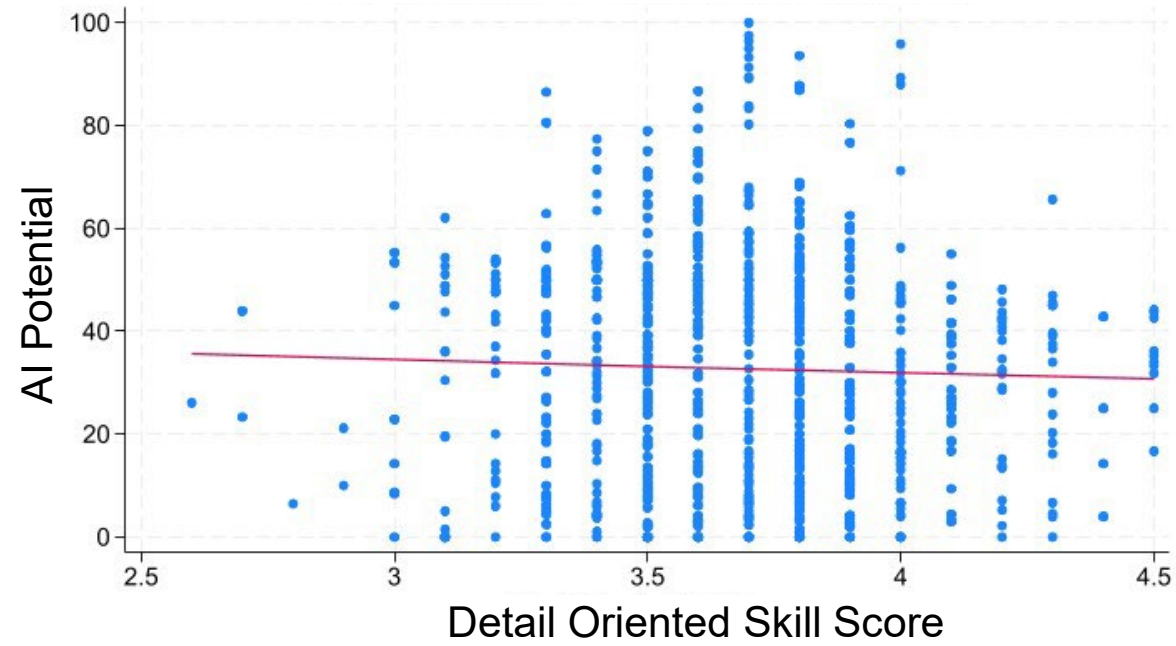
### Fine Motor Skill and AI Potential



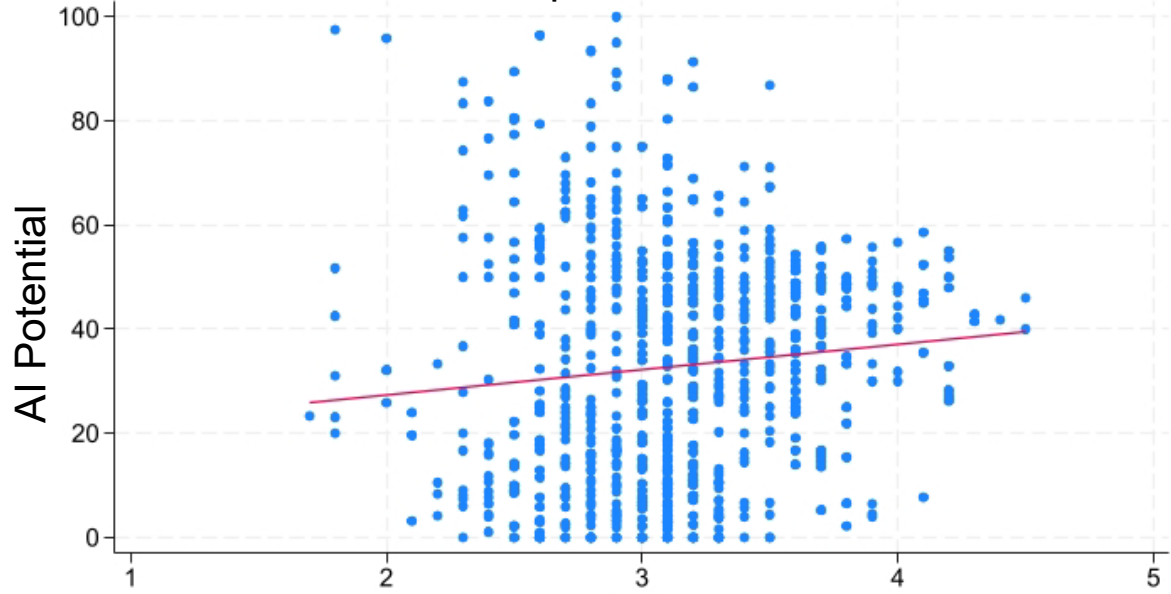
### Physical Strength/Stamina AI Potential



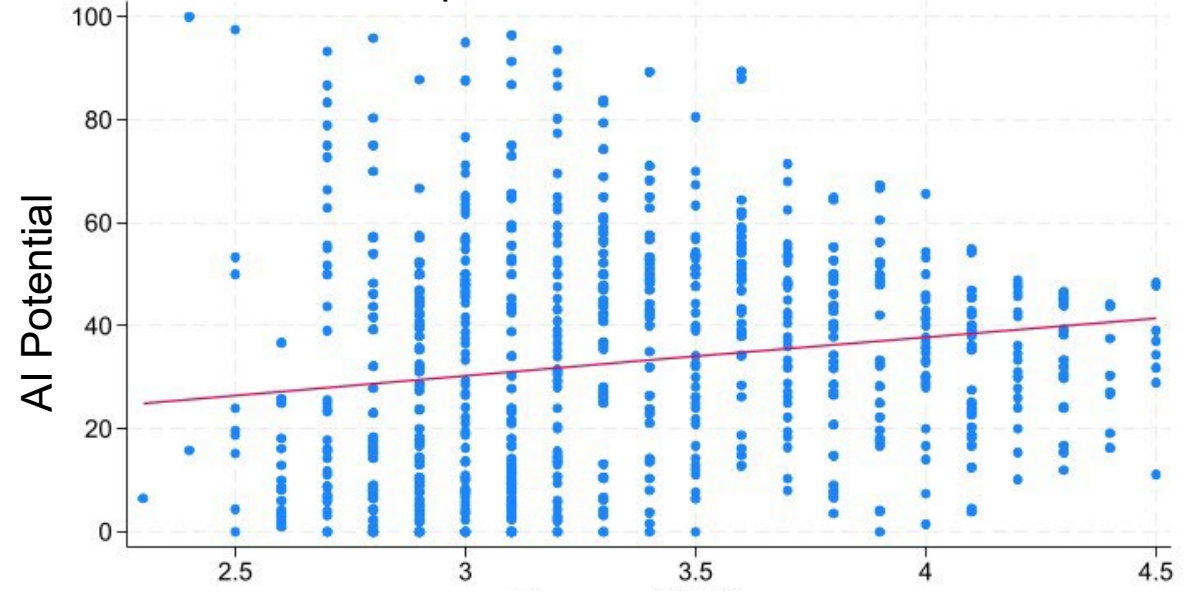
### Detail Oriented and AI Potential



Leadership and AI Potential

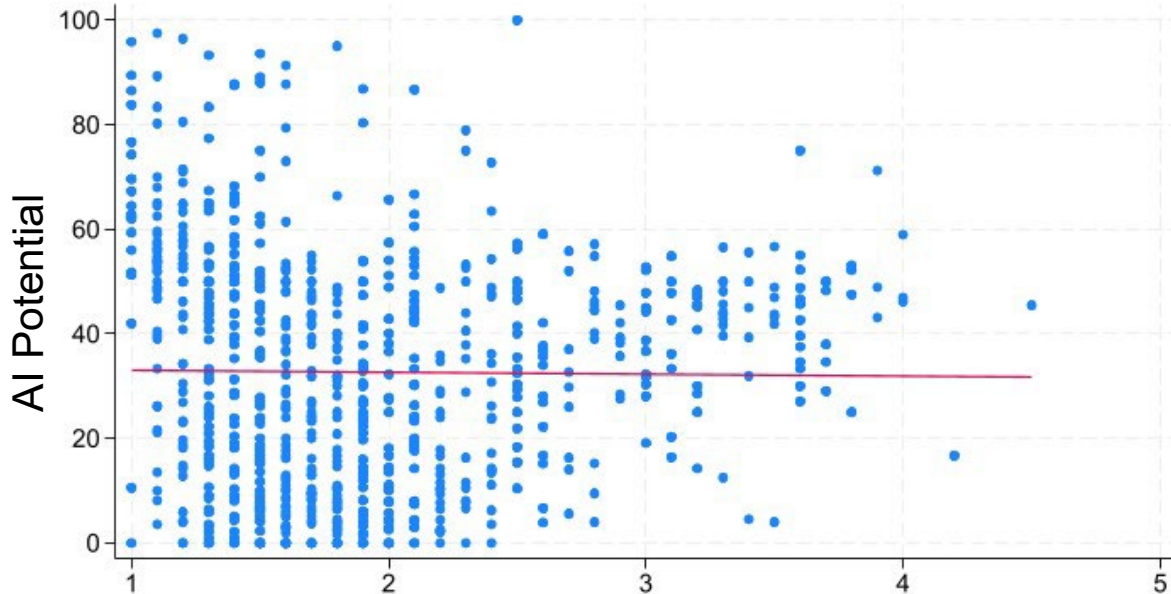


Interpersonal Skill and AI Potential



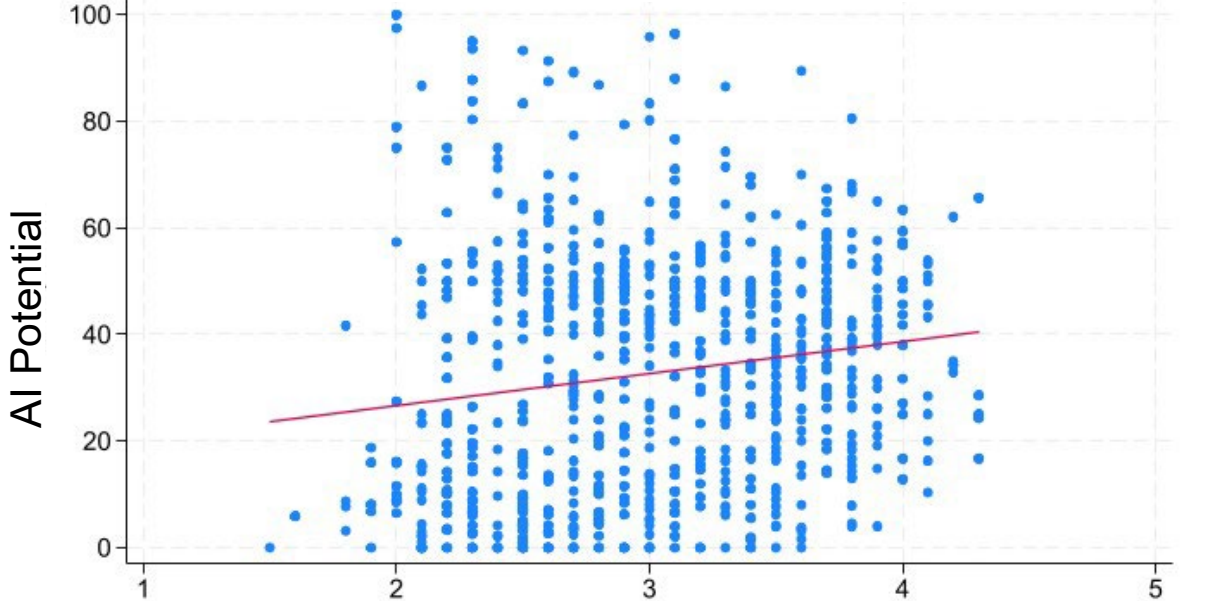
Leadership Skill Score

Science and AI Potential



Interpersonal Skill Score

Customer Service and AI Potential



Science Skill Score

Customer Service Skill Score

## 15 occupations among highest AI potential and 500+ jobs

A selection of occupations with high AI potential illustrates the difference in compensation and typical educational requirements.

Many occupations with high task potential are administrative support jobs. AI can automate many typical tasks such as organization, processing, entering or recording information. Others are higher paying, specialized computer and mathematical jobs in which AI can facilitate code generation and troubleshooting.

Occupation Title	AI Task Potential	Jobs	Average Hourly Wage
Software Developers	87%	3,200	\$56
Payroll and Timekeeping Clerks	84%	500	\$25
Insurance Claims and Policy Processing Clerks	83%	1,400	\$24
Bookkeeping, Accounting, and Auditing Clerks	80%	7,400	\$23
Billing and Posting Clerks	77%	1,900	\$21
Computer Systems Analysts	75%	2,400	\$43
Data Scientists	75%	700	\$52
Network and Computer Systems Administrators	73%	1,300	\$40
Court, Municipal, and License Clerks	70%	1,000	\$22
Legal Secretaries and Administrative Assistants	70%	900	\$24
Compliance Officers	68%	1,500	\$38
Eligibility Interviewers, Government Programs	68%	700	\$22
Dispatchers, Except Police, Fire, and Ambulance	67%	900	\$25
Interviewers, Except Eligibility and Loan	67%	1,200	\$19
Medical Secretaries and Administrative Assistants	67%	3,400	\$21



## Legal Secretaries and Administrative Assistants task example

Some of the most important responsibilities of this occupation include:

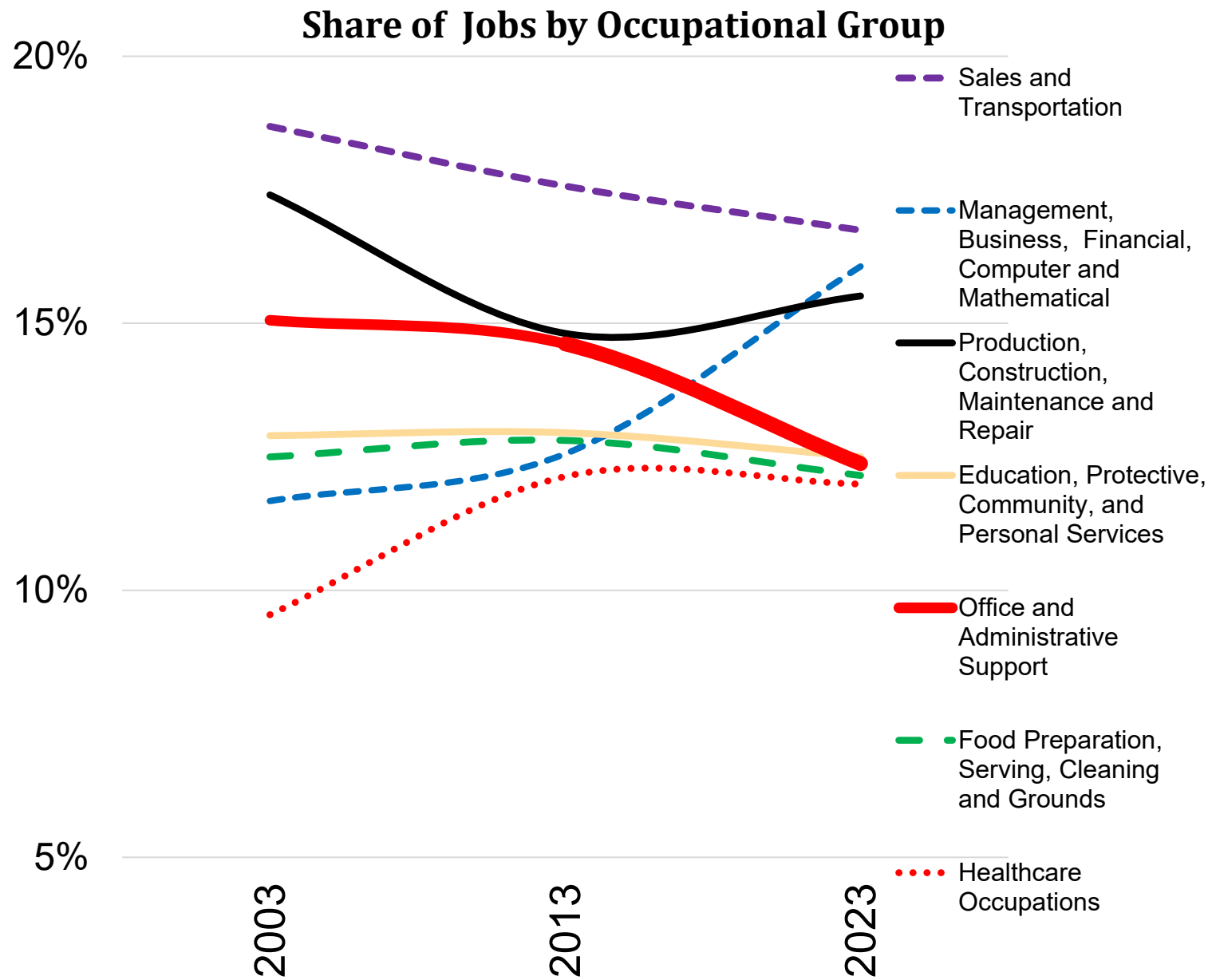
- Documenting, recording information
- Processing, providing information
- Organizing, planning

Many of these tasks are already well suited to be performed more efficiently by or with the assistance of AI.

Legal Secretaries and Administrative Assistants (43-6012)		
Importance	Work Activity	Work Activity Description
87	Performing Administrative Activities	Performing day-to-day administrative tasks such as maintaining information files and processing paperwork.
85	Communicating with Supervisors, Peers, or Subordinates	Providing information to supervisors, co-workers, and subordinates by telephone, in written form, e-mail, or in person.
83	Working with Computers	Using computers and computer systems (including hardware and software) to program, write software, set up functions, enter data, or process information.
82	Processing Information	Compiling, coding, categorizing, calculating, tabulating, auditing, or verifying information or data.
80	Organizing, Planning, and Prioritizing Work	Developing specific goals and plans to prioritize, organize, and accomplish your work.
77	Establishing and Maintaining Interpersonal Relationships	Developing constructive and cooperative working relationships with others and maintaining them over time.
75	Documenting, Recording Information	Entering, transcribing, recording, storing, or maintaining information in written or electronic/magnetic form.

## Demand for administrative support jobs had been slipping prior to the rise of AI

There are 12,000 fewer administrative support jobs than two decades ago. They now comprise 12 percent of jobs. AI is likely to contribute to further decreases.





## 15 occupations among lowest AI potential and 1,000+ jobs

Occupations with the lowest AI potential and significant employment involve physical work activities, such as food preparation, cleaning, maintenance, construction, production, and transportation.

Occupation Title	AI Task Potential	Jobs	Average Hourly Wage
Cooks, Fast Food	0%	1,580	\$17
Dining, Cafeteria Attendants and Bartender Helpers	0%	1,470	\$18
Dishwashers	0%	1,790	\$16
Janitors and Cleaners	0%	9,490	\$19
Maids and Housekeeping Cleaners	0%	5,970	\$17
Bus, Truck Mechanics and Diesel Engine Specialists	0%	1,500	\$26
Packaging and Filling Machine Operators	0%	1,900	\$21
Highway Maintenance Workers	2%	1,730	\$22
Helpers--Electricians	2%	1,010	\$21
Landscaping and Groundskeeping Workers	2%	5,270	\$20
Industrial Truck and Tractor Operators	3%	2,670	\$23
Food Preparation Workers	4%	6,690	\$17
Laborers and Freight, Stock, and Material Movers	4%	5,280	\$19
Construction Laborers	5%	3,130	\$21
Operating Engineers and Equipment Operators	5%	1,960	\$26

# Section 2

# Literature Review

# *Applying AI to Rebuild Middle Class Jobs*

## David Autor

“Expertise is the primary source of labor’s value in the US and other industrialized countries

...Expertise is in constant flux. Forms that once commanded a substantial market premium — farriery, typesetting, fur-trapping, spell-checking — are all now either antiquated or automated. Simultaneously, many of the most highly paid jobs in industrialized economies — oncologists, software engineers, patent lawyers, therapists, movie stars — did not exist until specific technological or social innovations created a need for them...

AI could potentially enable a larger set of workers to perform high-stakes expert tasks. It can do this by complementing their skills and supplementing their judgment.”

Autor cites experimental evidence showing that using AI can lead to productivity improvement that could reduce the inequality in expertise (and therefore earnings):

“...ChatGPT did not eliminate the role of expertise. While the best writers remained at the top of the heap using either set of tools, ChatGPT enabled the most capable to write faster and the less capable to write both faster and better — so the productivity gap between adequate and excellent writers shrank.”

# *The Simple Macroeconomics of AI*

## Daron Acemoglu

In the U.S. over the last 75 years:

- Economic (real Gross Domestic Product) growth has averaged about 3 percent per year
- Productivity growth has averaged 2 percent per year

Some economists have predicated that AI could create a higher growth trajectory, even double these historic growth rates.

[Acemoglu estimates that](#) over the next decade, AI will produce a “modest increase” between 1.1 to 1.6 percent of additional economic growth over the next 10 years, with a marginally higher productivity growth rate.

“...AI advances are unlikely to increase inequality as much as previous automation technologies because their impact is more equally distributed across demographic groups, but there is also no evidence that AI will reduce labour income inequality.”

# Technological Disruption in the Labor Market

## Deming, Ong and Summers

### The pace of labor market disruption has slowed

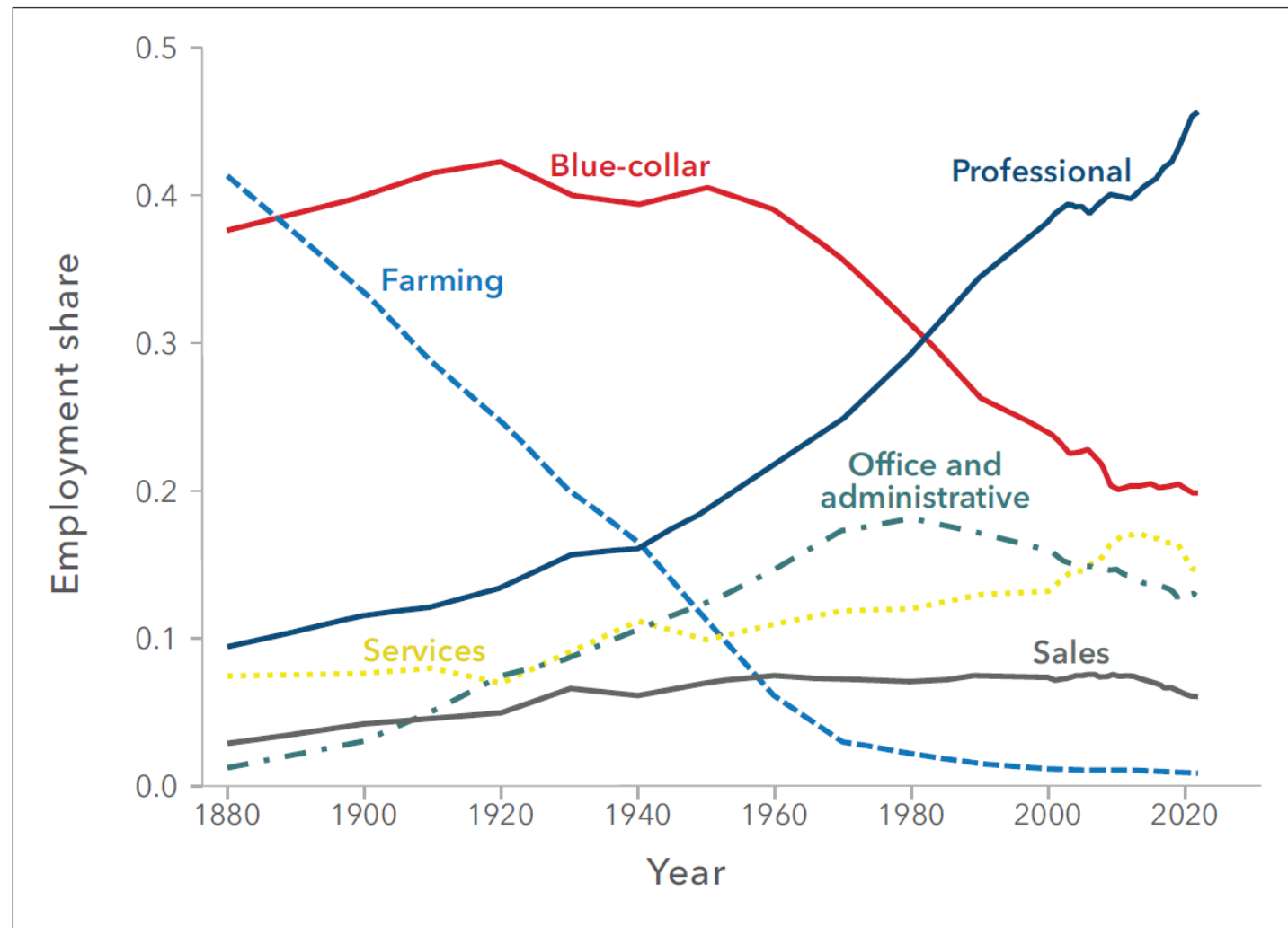
“...even though technological breakthroughs often occur rapidly, **technology gets adopted gradually, and the disruption of labor markets takes decades....**”

“...The changes in the structure of US employment at the end of the nineteenth century were greater than in any decade...

Even more disruptive was the period between 1940 and 1970, when agricultural employment was still disappearing, manual labor was shifting into production and away from railroads, and clerical and administrative work were growing rapidly.

**The years spanning 1990 to 2017 were the most stable period in the history of the US labor market, going back nearly 150 years.”**

Figure 1: Changes in the occupation structure of the US labor market, 1880-2024



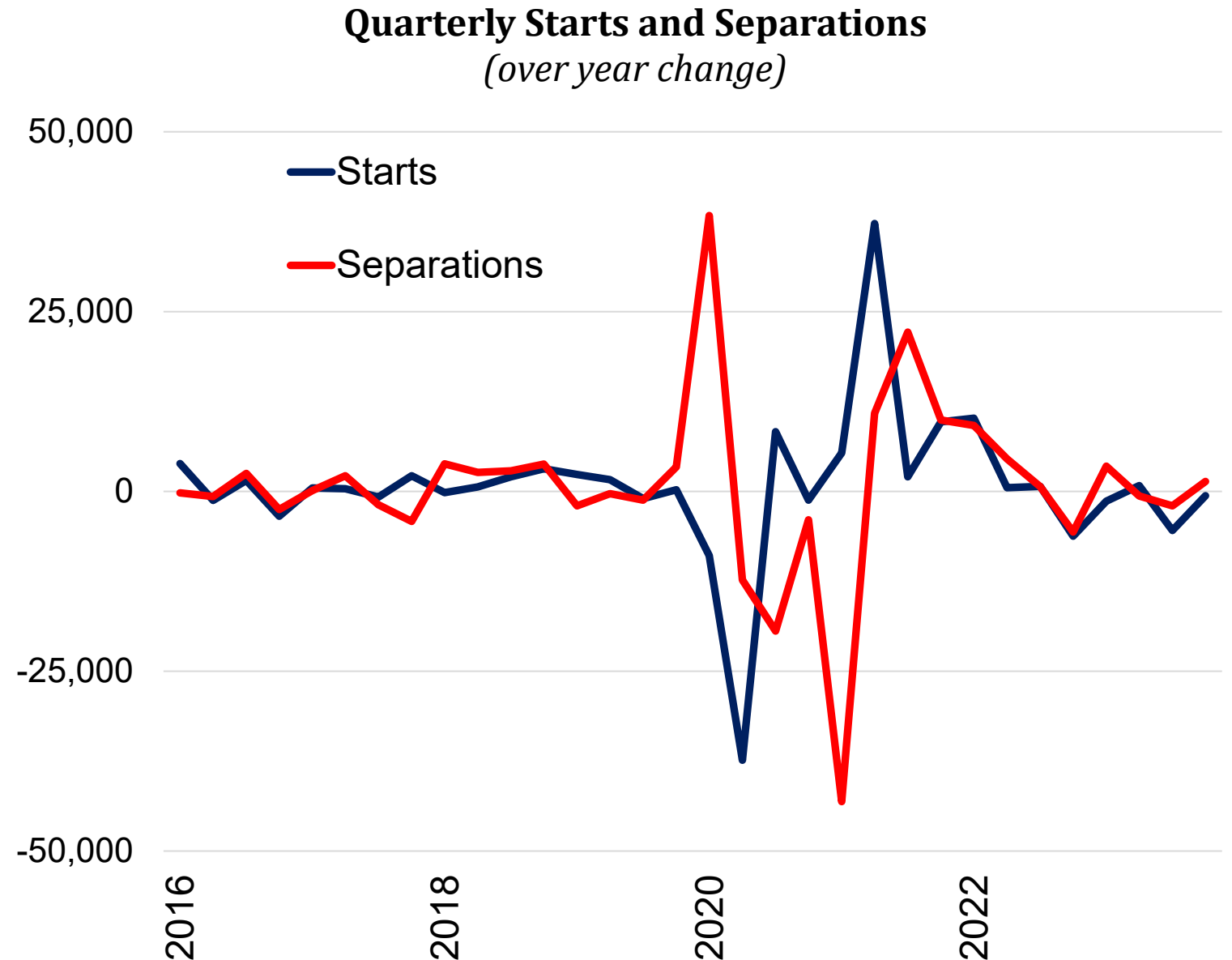
## The pace of hiring is an important factor in determining net job changes

The pandemic illustrates this point, a large share of the job impact occurred from a slow down of hiring that would have occurred if not for the public health emergency.

Adoption of AI is likely to impact demand for labor and can lead to significant changes over time in ways other than sudden, large layoff events.

For example, employers may integrate AI into their organization and change their recruiting strategies and job responsibilities as a result: hiring fewer workers in some occupations and/or more in others.

Changes in skill demand can occur through both layoff of incumbent workers and through changes in the pace and types of recruiting.



# Takeaways

Predictions from economists about the impact of AI vary widely. AI could have the effect of displacing workers in some occupations and increasing demand for workers in others.

- Long-term GDP forecasts range from a modest increase to a doubling of growth rates
- AI has potential to reduce labor market inequality (Autor) by increasing productivity of workers with lower earning potential, or widen inequality by displacing workers in jobs not typically requiring a college degree (Acemoglu)
- Past waves of technological breakthrough have played out over decades though some predict AI will result in sudden change

Compared to past waves of automation in which impacts were concentrated in specific industries and geographic areas, impacted workers in specific education and demographic groups, the impact of AI could be much more diffuse.

Occupations most likely to be impacted by AI include those in the computer and mathematical and the administrative support groups. These jobs often involve skills related to computer/IT, analysis/critical thinking, writing/reading, problem-solving and decision-making.

Jobs in these fields are somewhat divided between higher-paying roles that require advanced education/training for entry and lower-paying positions—many clerical or administrative in nature—that have already experienced declining labor demand in recent decades.