

Artificial Intelligence: *Implications for Maine's Workforce*

Published: April 11, 2025

Updated: January 9, 2026

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Introduction

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

Measuring Occupational AI Potential

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

Eloundou et al. (2024) use the [O*Net database](#) of occupational task composition and define exposure to or 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.**” [GPTs are GPTs: An early look at the labor market impact potential of large language models](#)

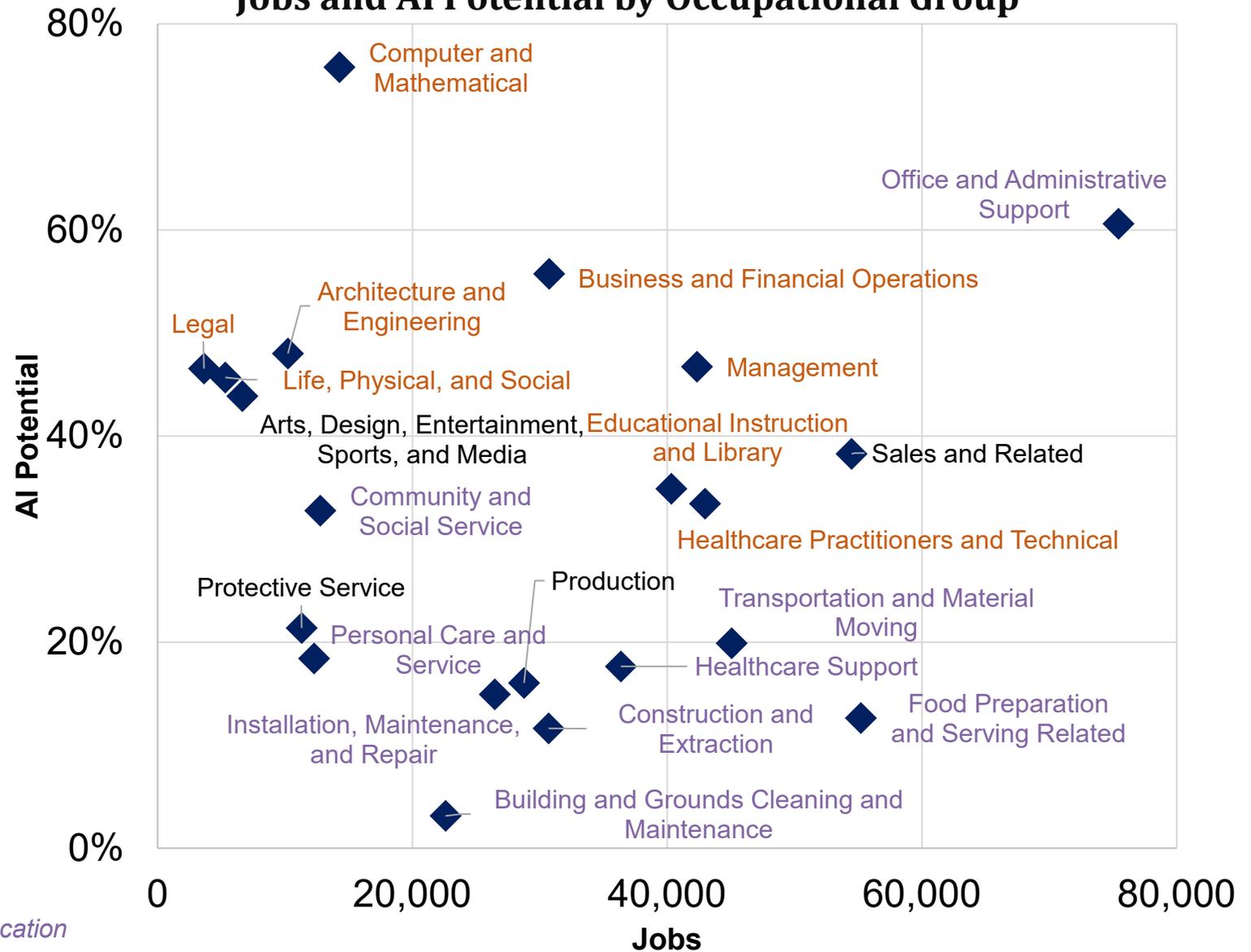
This report overlays Maine’s [Occupational Employment and Wage Statistics](#) (OEWS) with this measure of occupational potential for AI to facilitate and/or automate tasks.

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, and food preparation – have the lowest share of AI impacted tasks.

Jobs and 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

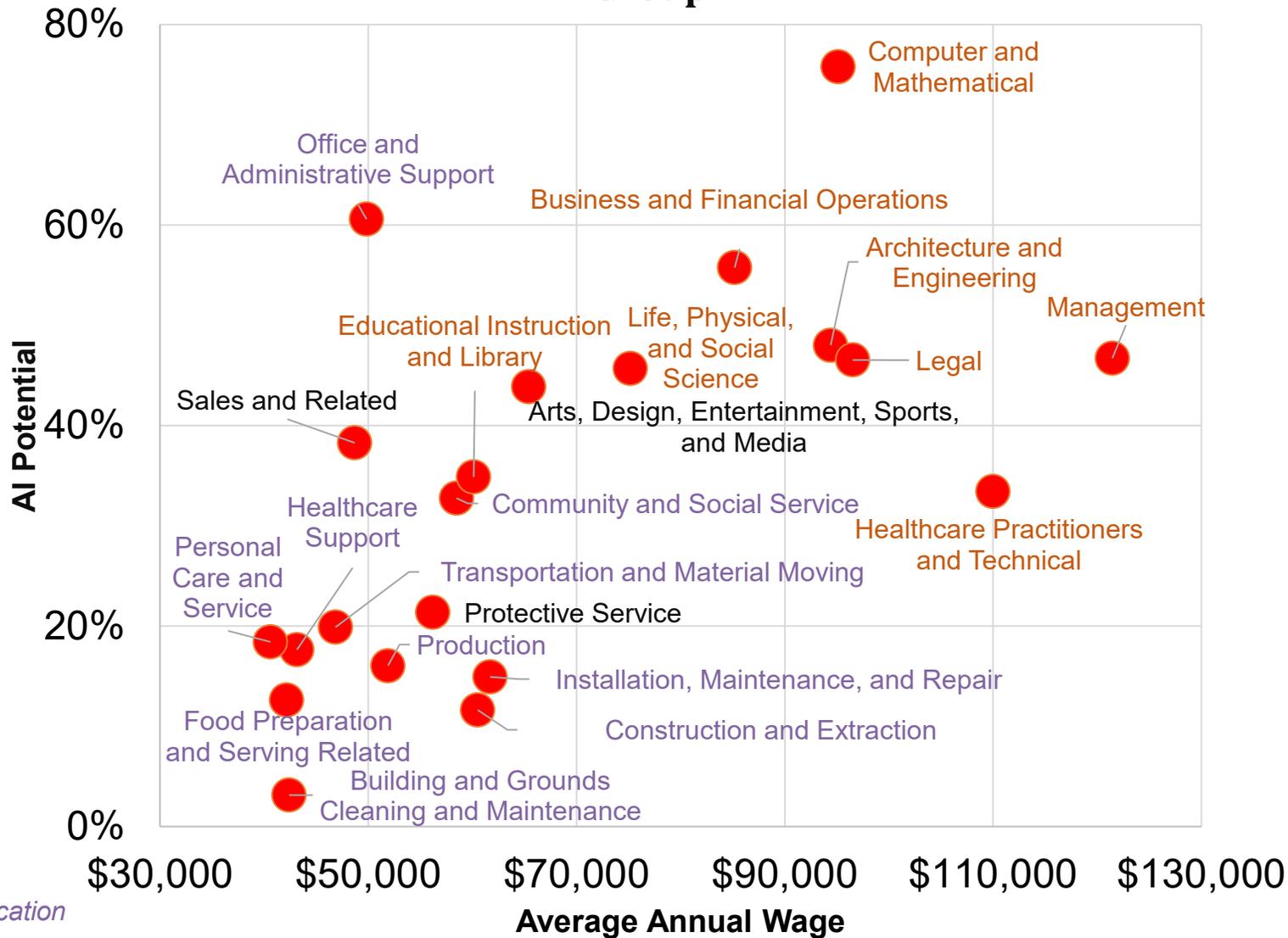
Educational requirements in these occupations vary

Generally, jobs with the highest potential AI impact have high average wages

Average annual wages in occupational groups with the lowest AI impact range from \$40,000-\$60,000.

Middle and high-impacted groups are a mix of low, middle and high wage occupations. This is highlighted by the two most impacted groups: office and administrative support (\$50,000 annually) and computer and mathematical (\$95,000 annually).

Average Annual Wage and AI Potential by Occupational Group



Most jobs in these occupations require post-secondary education

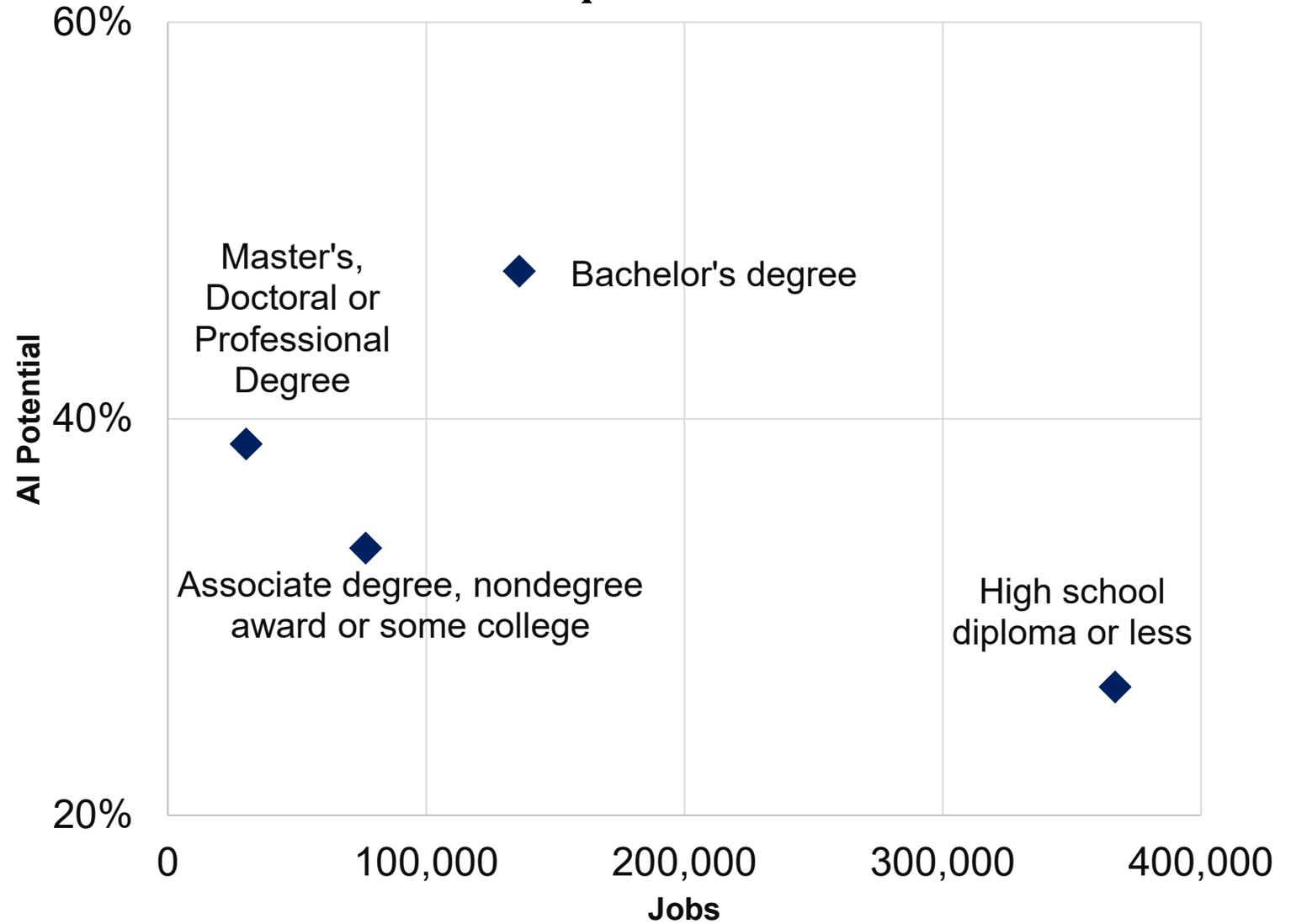
Most jobs in these occupations do not require post-secondary education

Educational requirements in these occupations vary

Average AI Impact increases with typical educational requirements

Educational requirements generally are higher as AI occupational potential increases.

Jobs and AI Potential by Typical Educational Requirement

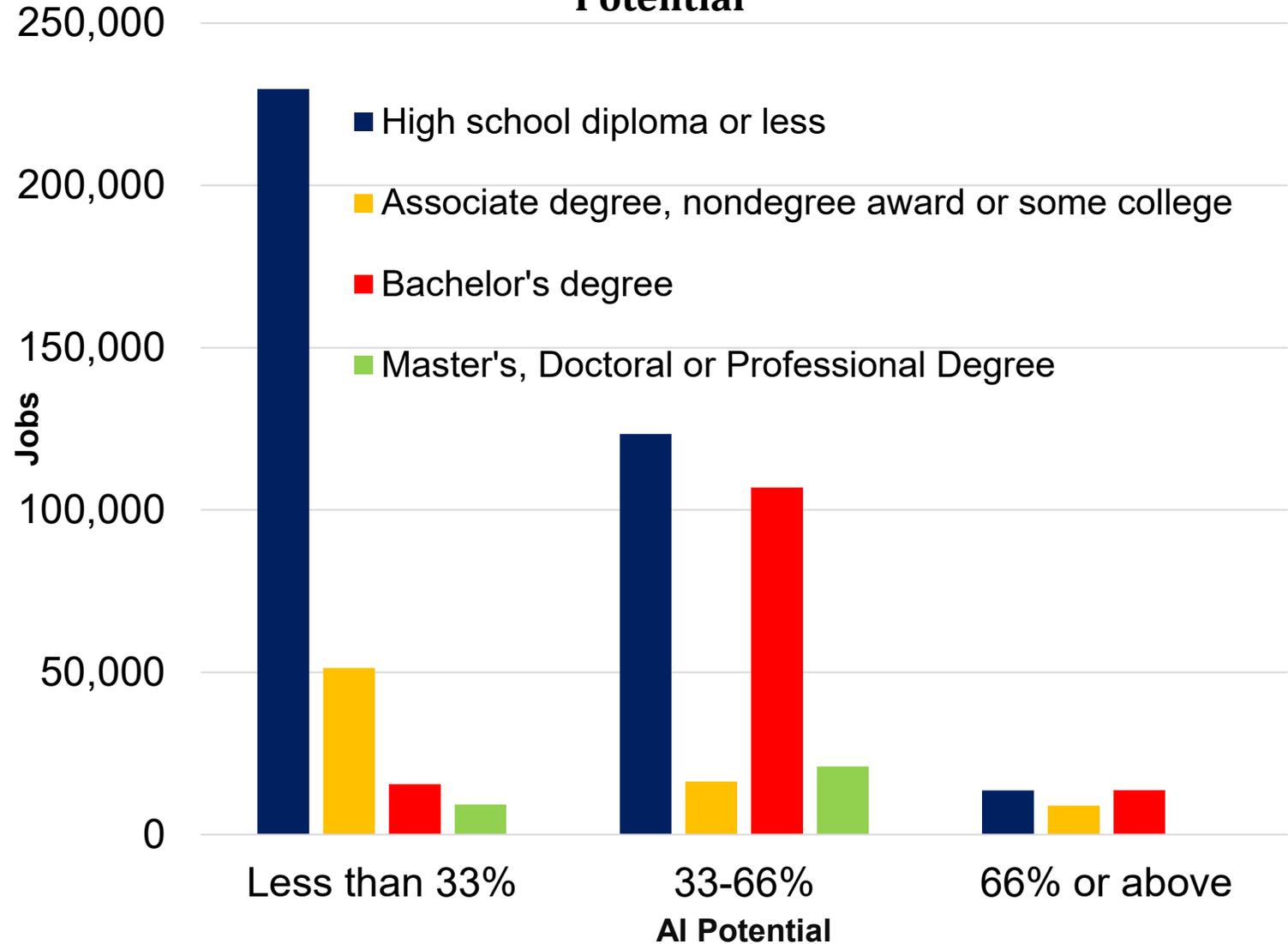


Jobs with low AI potential mostly do not require post-secondary education

36,000 jobs (6 percent of total employment) have AI potential impact affecting more than two-thirds of typical job tasks. There is a split in terms of typical educational requirements (low, middle and high).

The middle-impacted group is split mostly between jobs requiring a bachelor's degree and those not requiring post-secondary education for entry.

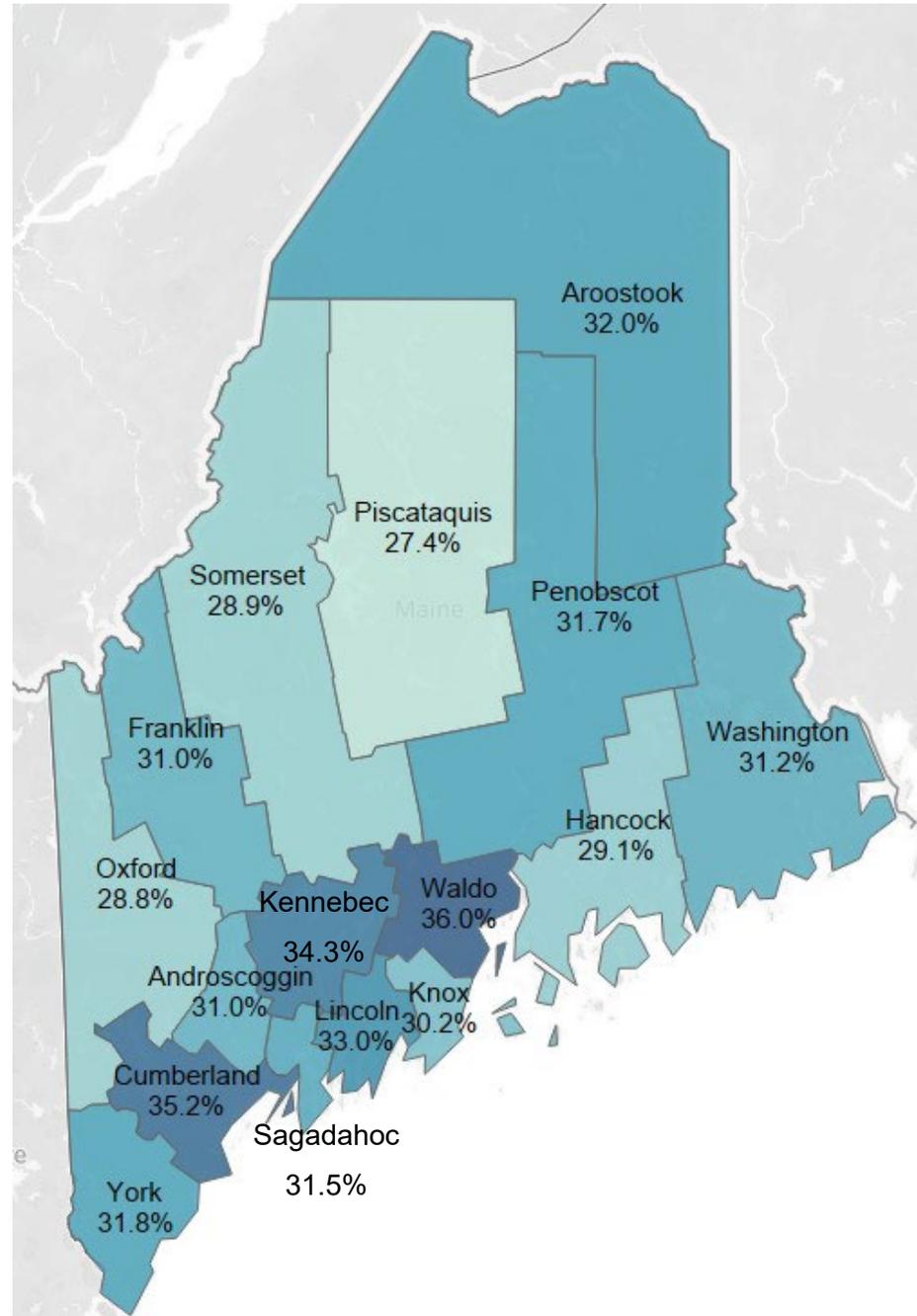
Jobs by Typical Educational Requirement and AI Task Potential



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

The potential impact varies from 27 to 36 percent of average job tasks among counties.

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



Skills and AI Potential

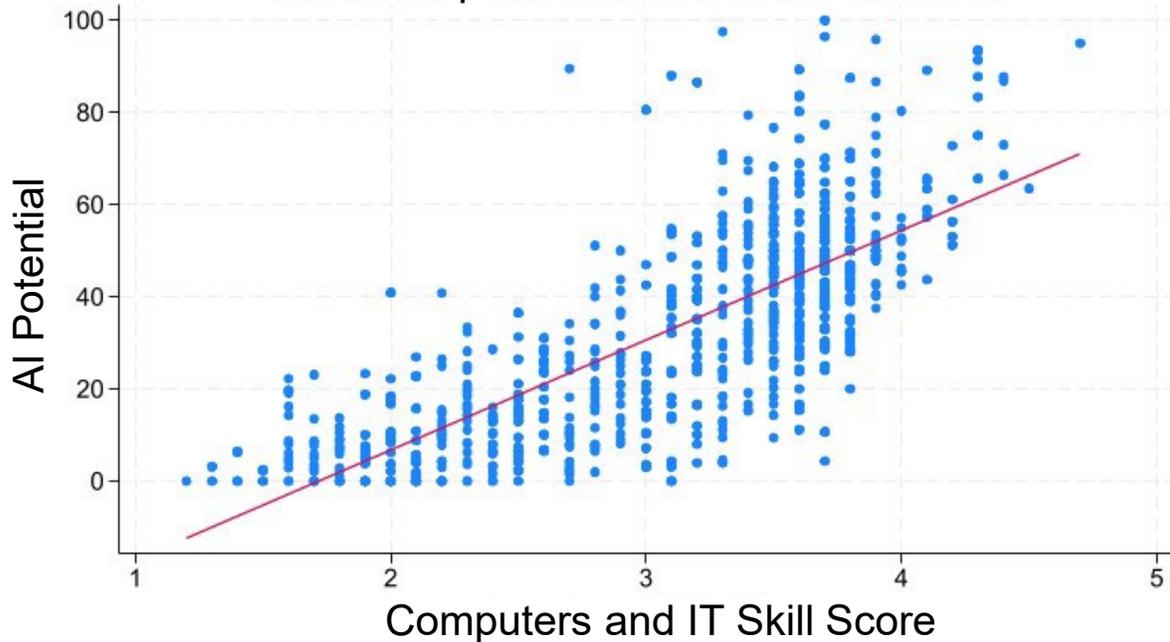
The [U.S. Bureau of Labor Statistics defines skill](#) as a capacity that is developed (through education, training, experience), general (applicable across many occupations), applied (action oriented), and work-related (to performance at work).

The following three slides document the relationship between the relative importance of each skill category to each occupation and the potential use of AI (Eloundou et. Al, 2024) in tasks typically performed in that occupation.

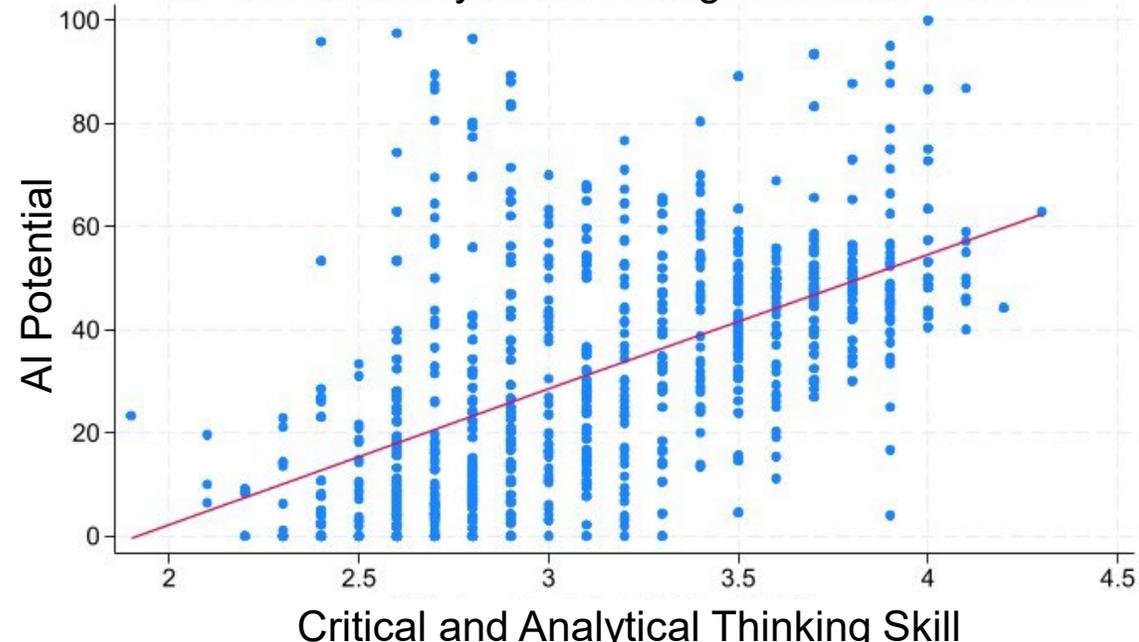
Of the 17 skill categories:

- 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



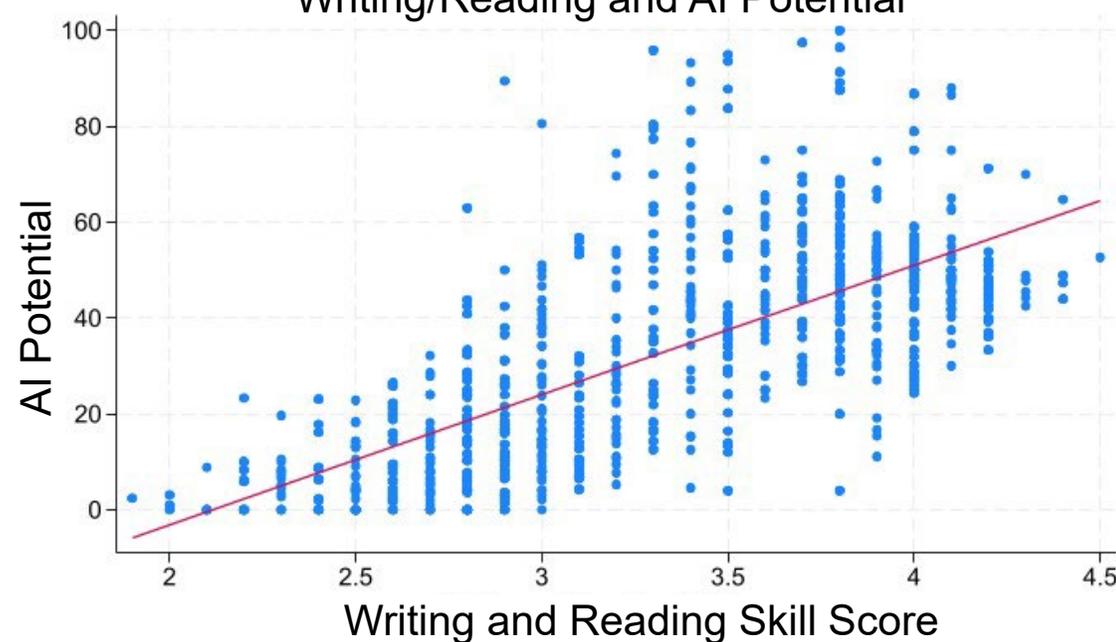
Critical/Analytical Thinking and AI Potential



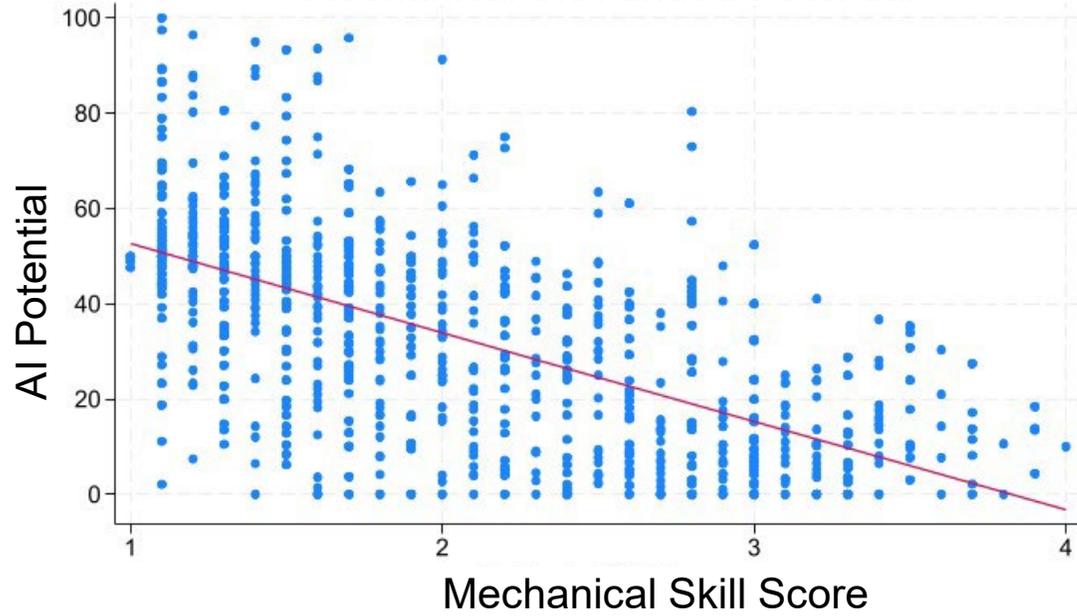
Problem Solving/Decision-Making and AI Potential



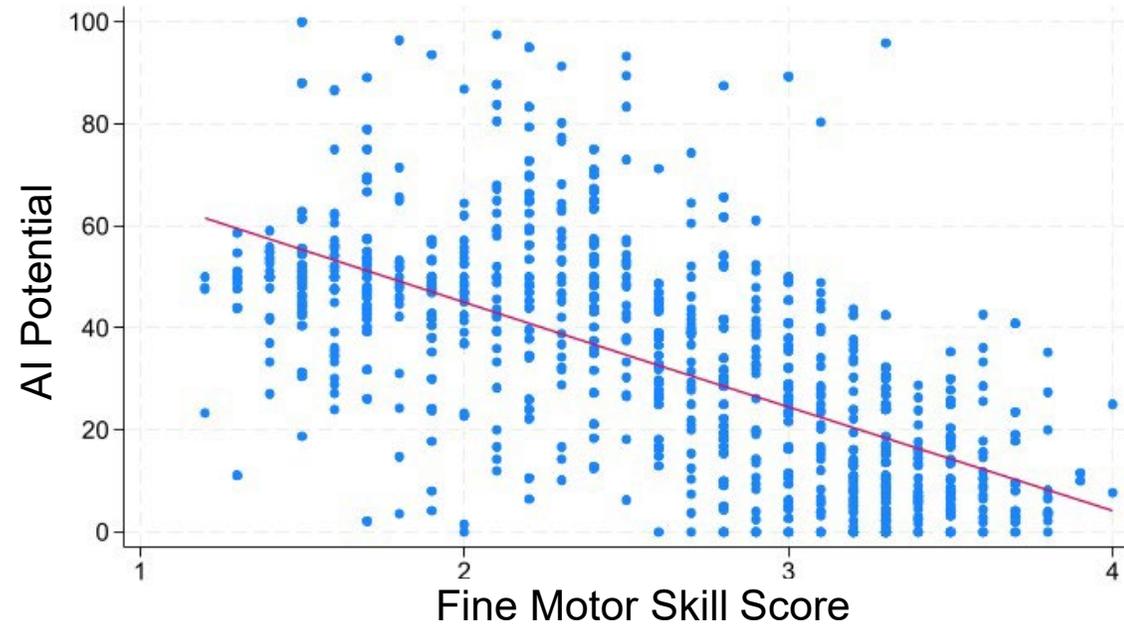
Writing/Reading and AI Potential



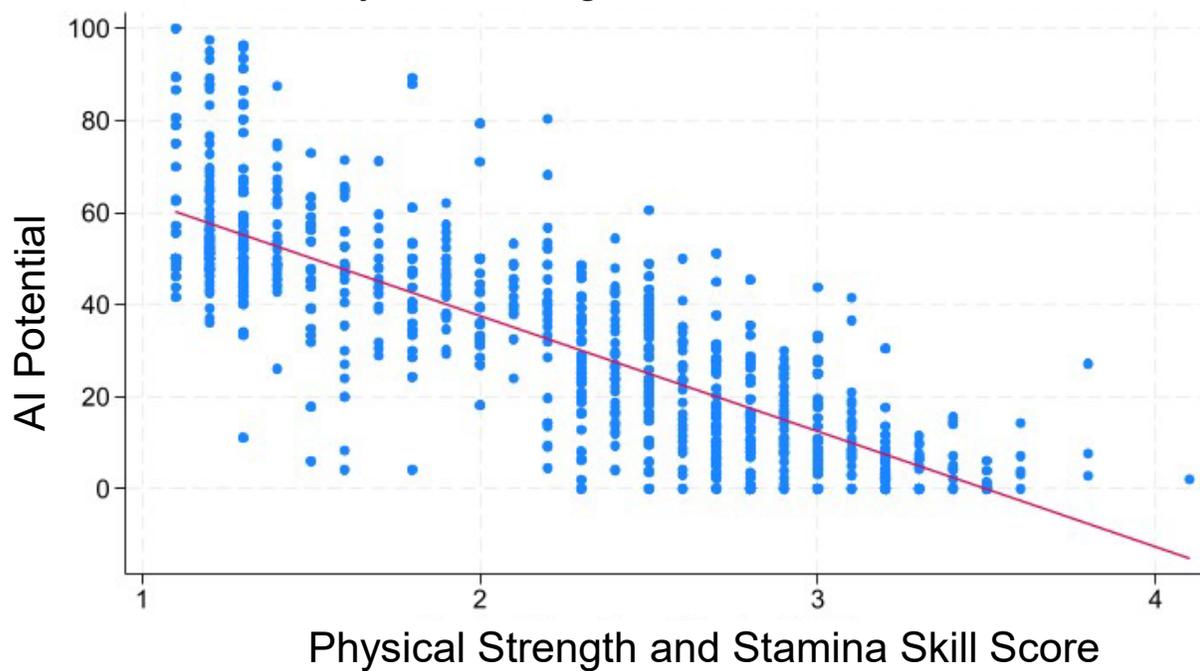
Mechanical Skill and AI Potential



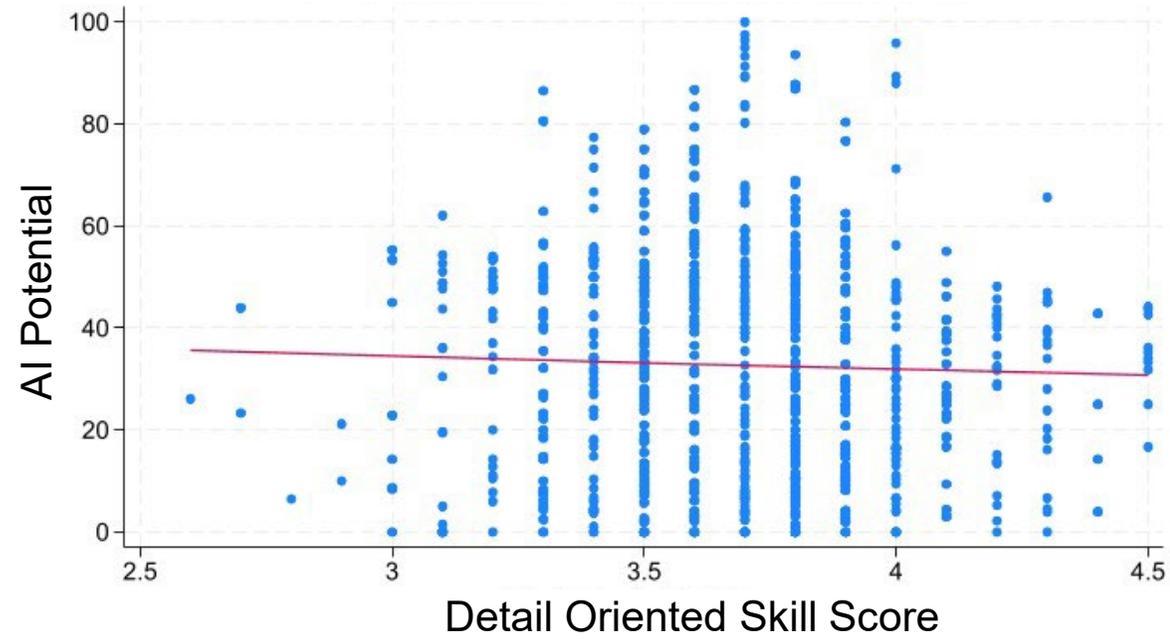
Fine Motor Skill and AI Potential



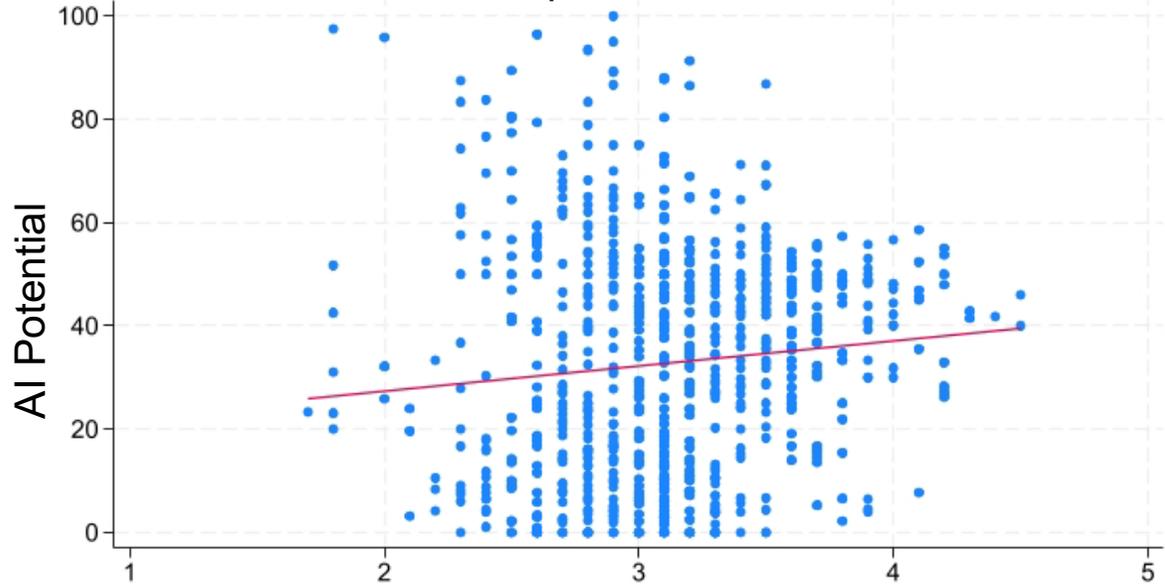
Physical Strength/Stamina AI Potential



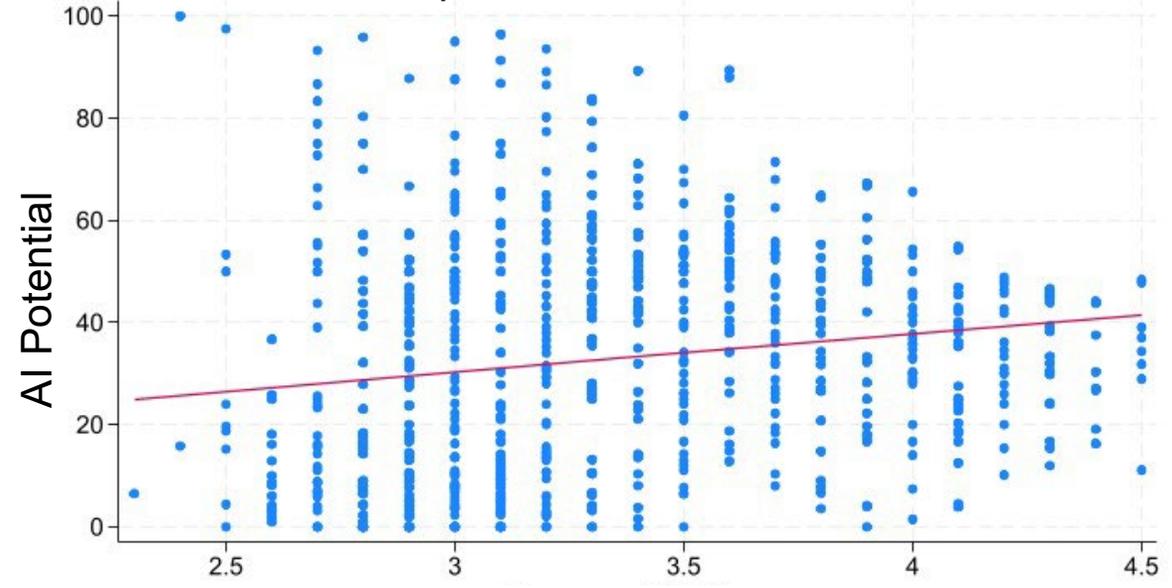
Detail Oriented and AI Potential



Leadership and AI Potential

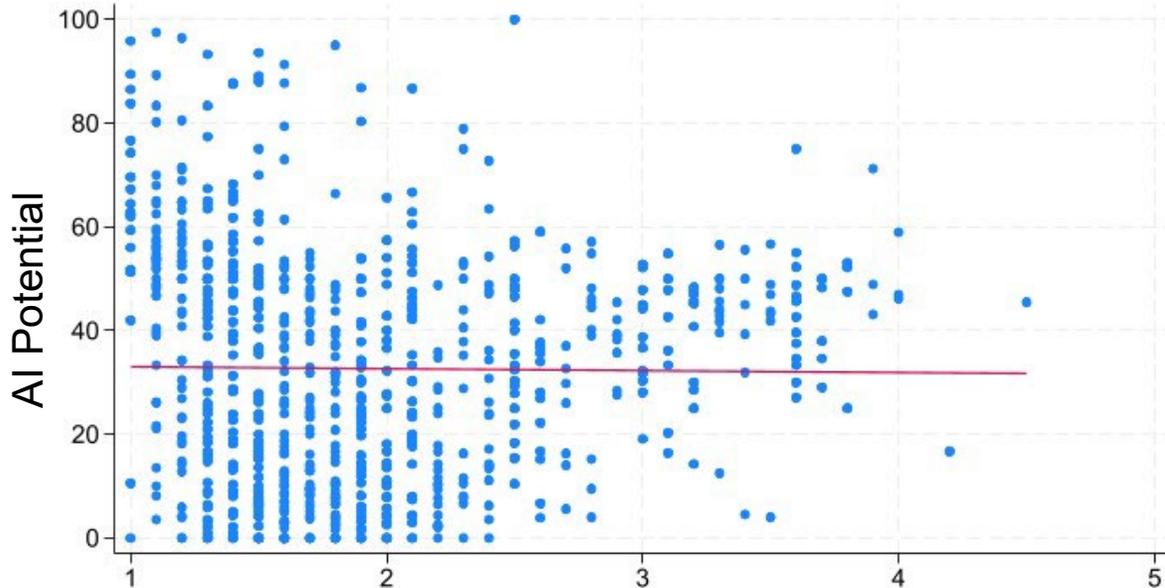


Interpersonal Skill and AI Potential



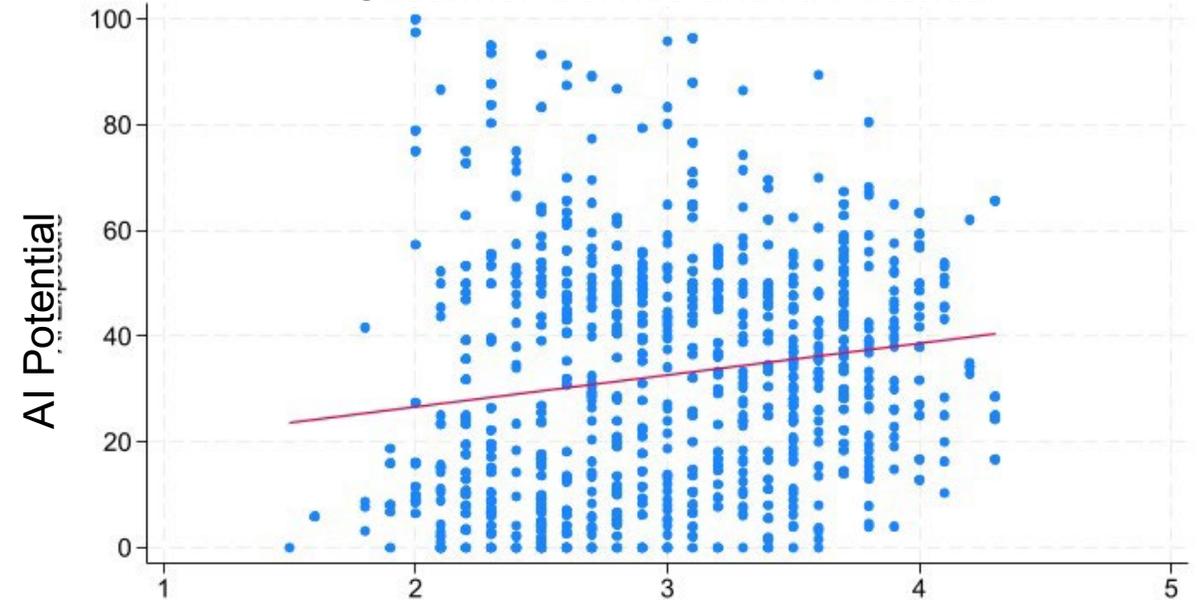
Leadership Skill Score

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 or clerical. 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%	2,740	\$57
Payroll and Timekeeping Clerks	84%	510	\$27
Insurance Claims and Policy Processing Clerks	83%	1,520	\$28
Bookkeeping, Accounting, and Auditing Clerks	80%	8,310	\$25
Billing and Posting Clerks	77%	1,620	\$23
Computer Systems Analysts	75%	2,600	\$50
Data Scientists	75%	1,040	\$49
Network and Computer Systems Administrators	73%	1,270	\$39
Court, Municipal, and License Clerks	70%	1,190	\$24
Legal Secretaries and Administrative Assistants	70%	610	\$25
Compliance Officers	68%	1,890	\$42
Eligibility Interviewers, Government Programs	68%	590	\$22
Dispatchers, Except Police, Fire, and Ambulance	67%	720	\$27
Interviewers, Except Eligibility and Loan	67%	1,050	\$20
Medical Secretaries and Administrative Assistants	67%	4,550	\$22

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.

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.

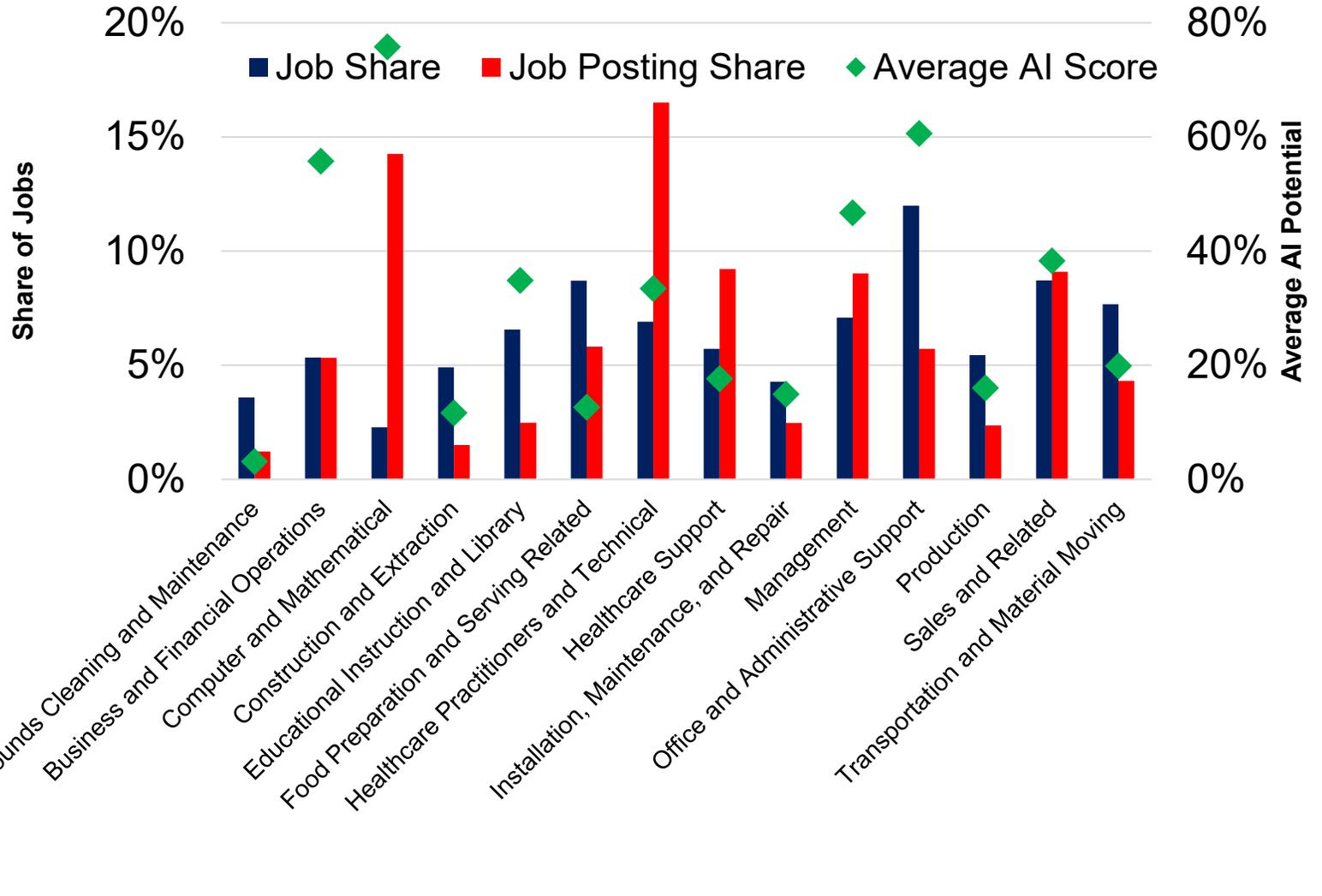
Occupation Title	AI Task Potential	Jobs	Average Hourly Wage
Cooks	0%	3,020	\$17
Dining Attendants and Bartender Helpers	0%	1,770	\$20
Dishwashers	0%	2,230	\$17
Janitors and Cleaners	0%	9,800	\$20
Maids and Housekeeping Cleaners	0%	4,860	\$18
Bus and Truck Mechanics and Diesel Engine Specialists	0%	1,590	\$29
Packaging and Filling Machine Operators	0%	1,480	\$23
Highway Maintenance Workers	2%	1,450	\$23
Landscaping and Groundskeeping Workers	2%	6,020	\$21
Helpers--Electricians	2%	1,100	\$24
Industrial Truck and Tractor Operators	3%	2,950	\$24
Food Preparation Workers	4%	5,540	\$17
Laborers and Freight, Stock, and Material Movers	4%	5,940	\$20
Construction Laborers	5%	3,180	\$23
Operating Engineers and Construction Equipment Operators	5%	1,980	\$28

Health care and clerical occupational groups stand out when comparing jobs to job postings

A higher share of job postings is for health care related occupations (registered nurses, home health and personal care aides and certified nursing assistants in particular) and a much lower share of job postings are for administrative support workers compared to occupational employment.

The larger share of postings in the computer and mathematical group is attributable partially to remote jobs posted on job boards in Maine that do not have an employment location specified.

Job and Job Posting Share by Occupational Group



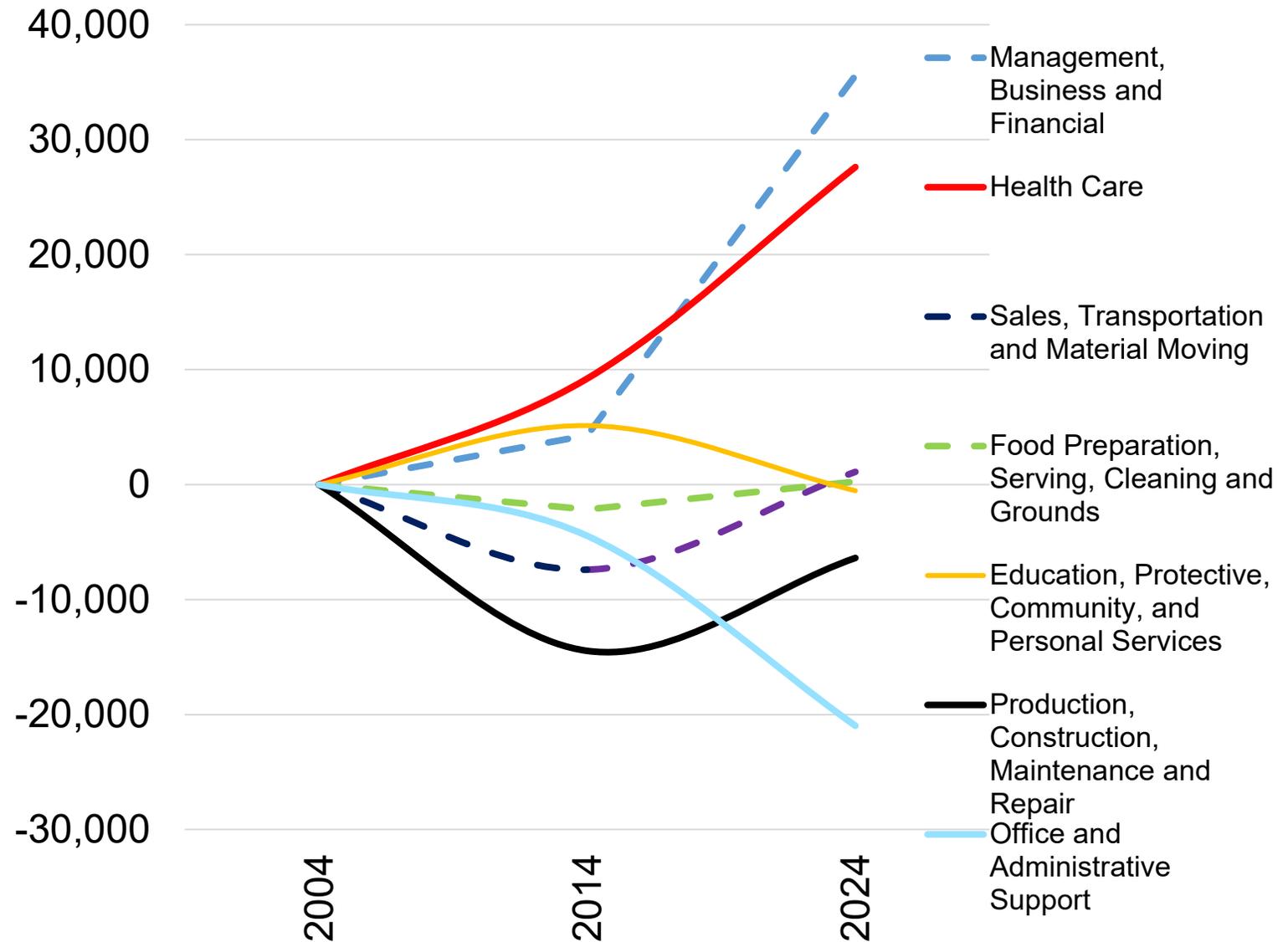
In the last two decades, job change has been concentrated in three occupational groups

Areas of industry growth led to job increases in management, business and finance and health care occupational groups. The decline in manufacturing is reflected in fewer jobs in production, construction, maintenance, and repair occupations, though employment in this group has stabilized.

New technologies changing the work environment of many industries have resulted in 21,000 fewer jobs among office and administrative support workers. AI is likely to contribute to further decreases.

(Jobs in Legal, Life, Physical, and Social Science and Arts, Design, Entertainment, and Media occupational groups combined represent less than 3 percent of total jobs and are not included in this chart.)

Change in Jobs by Combined Occupational Group

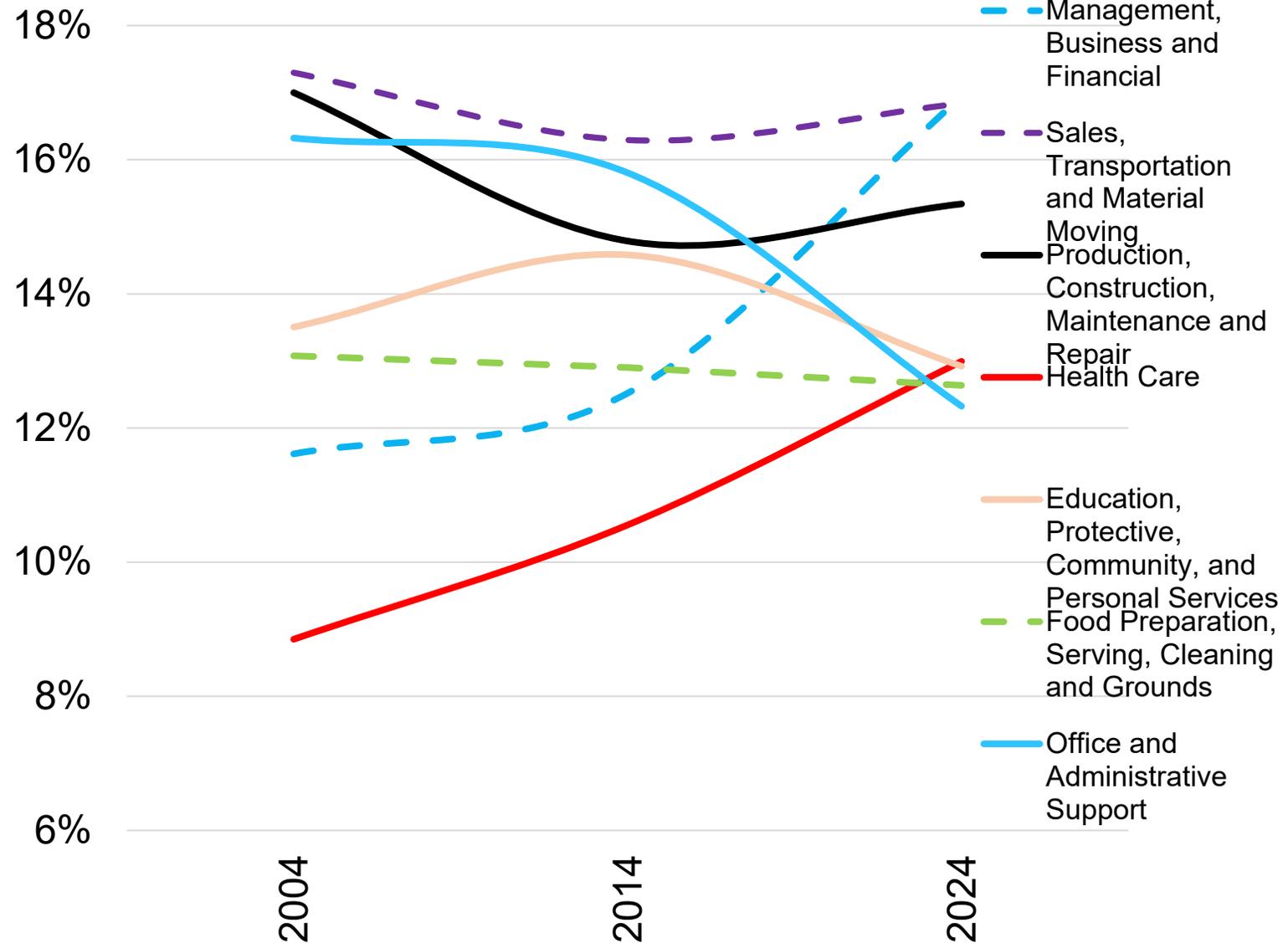


Most occupational groups represent a similar share of jobs over two decades

Management, business and financial related occupations now are the largest group, the share of jobs in this group grew by five percentage points over the last two decades. The share of jobs in healthcare occupations increased by four percentage points in this time. Production, construction, maintenance and repair occupations represent a lower share but remain the third largest occupational group. The overall occupational composition has shifted away from office and administrative support occupations.

(Jobs in Legal, Life, Physical, and Social Science and Arts, Design, Entertainment, and Media occupational groups combined represent less than 3 percent of total jobs and are not included in this chart.)

Share of Jobs by Combined Occupational Group



Takeaways

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

Occupations most likely to be affected by AI include those in computer and mathematical fields and in administrative support. These jobs often involve skills in IT and computer science, processing and organizing information, customer service, and reading and writing.

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

A lesson from past waves of automation that is likely to apply in the years ahead:

- Workers whose skills are complementary to emerging technologies and who can deploy those skills by using or further developing those technologies, are likely to be in high demand.
- Workers whose skills can be substituted by emerging technologies are more likely to experience decreasing demand, job displacement, and wage stagnation.