

12<sup>th</sup> IMF Statistical Forum

MEASURING THE IMPLICATIONS OF  
**AI ON THE  
ECONOMY**

NOVEMBER 20-21

Washington, DC

#StatsForum



# **Generative AI and jobs: A global analysis of potential effects on job quantity and quality**

NOVEMBER 20-21, 2024

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▶ [ilo.org](https://ilo.org)

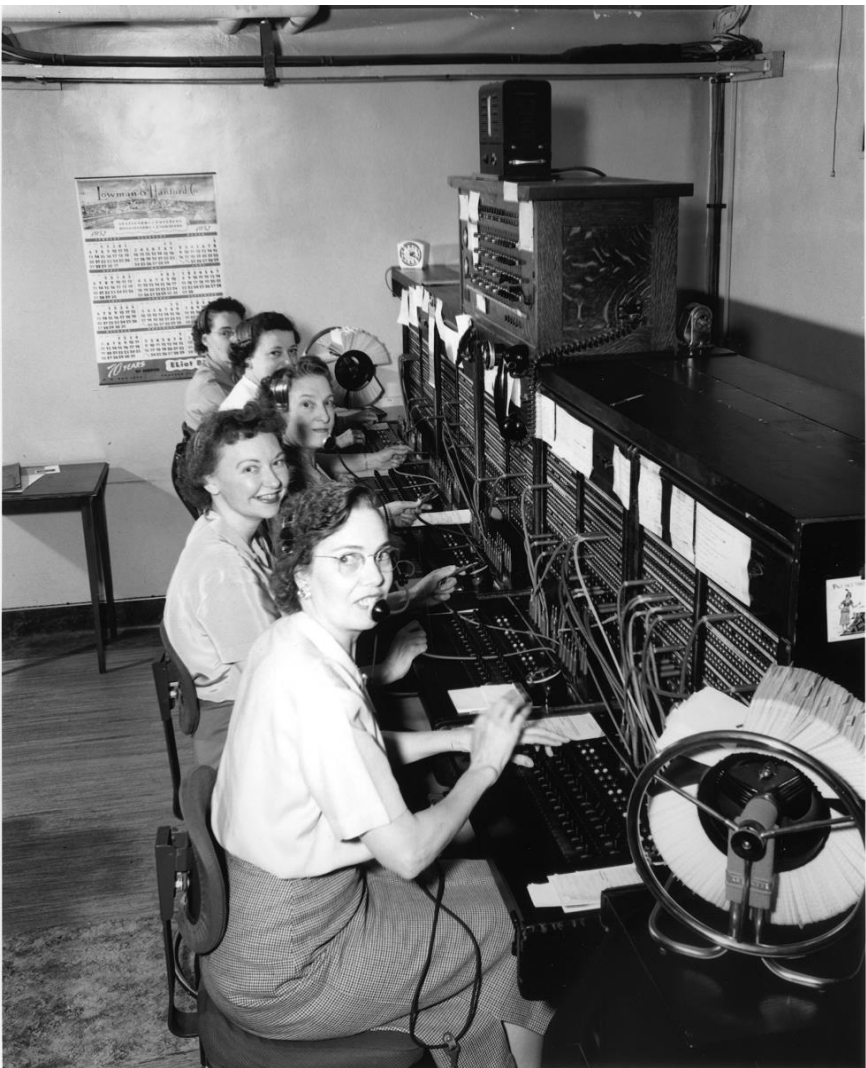
AI 'apocalypse' could take away almost 8m jobs in UK, says report

AI will hit the labor market like a 'tsunami,' IMF chief warns. 'We have very little time to get people ready for it'

## Exposure ≠ Impact

**'AI exposure' is the new buzz term to soften talk about job losses. Here's what it means**





# Methodology

## ISCO-08 Structure of occupations and tasks used in the study

ISCO-08 1-digit code	ISCO-08 1-digit full label	Nr of distinct 1-digit codes	Nr of distinct 2-digit codes	Nr of distinct 3-digit codes	Nr of distinct 4-digit codes	Total ISCO tasks	Total GPT tasks
0	Armed forces occupations	1	3	3	3	0	30
1	Managers	1	4	11	31	236	310
2	Professionals	1	6	27	92	751	920
3	Technicians and associate professionals	1	5	20	84	580	840
4	Clerical support workers	1	4	8	29	163	290
5	Service and sales workers	1	4	13	40	269	400
6	Skilled agricultural, forestry and fishery workers	1	3	9	18	141	180
7	Craft and related trades workers	1	5	14	66	503	660
8	Plant and machine operators, and assemblers	1	3	14	40	280	400
9	Elementary occupations	1	6	11	33	200	330
	Total	10	43	130	436	3,123	4,360

## Python API request (GPT-4):

*{“role”: “system”, “content”: “You are a skills specialist<sup>3</sup>. You will provide job definitions based on a job title and ISCO code. Follow instructions closely.”},*

*{“role”: “user”, “content”: “Look at this ISCO code and job title and provide an international standard definition of this job: ” + “Do not provide any other content, just the definition of some 100 words that describes what the job is about and which level of ISCO skills it requires (1-4).” + “ISCO code: ” + str(ISCO\_08) + “Job Title: ” + str(Title)}*

ISCO-08	Definition ISCO	Definition predicted by GPT4
2341	Primary school teachers teach a range of subjects at the primary education level.	Primary School Teachers (ISCO code: 2341) are education professionals responsible for planning, preparing, and delivering lessons and activities to facilitate the cognitive, social, and emotional development of children aged between 5 and 12 years old. They assess students' progress, provide a supportive and inclusive learning environment, and collaborate with parents and other education professionals to ensure the overall well-being and success of students. Primary School Teachers require ISCO skill level 4, which includes a bachelor's degree in education or a related field, and they must possess pedagogical skills, communication skills, and creativity in teaching methodologies.



## Task-level predictions

ISCO-08	Tasks ISCO	Tasks predicted by GPT4
2341	<p>Preparing daily and longer-term lesson plans in accordance with curriculum guidelines;</p> <p>Instructing children individually and in groups, using various teaching methods and materials (e.g. computers, books, games), adapting to children's varying needs;</p> <p>Maintaining discipline and good working habits in the classroom;</p> <p>Planning and conduct activities with the children such as sporting activities, concerts and excursions;</p> <p>Assigning and grading class work and homework;</p>	<p>Develop lesson plans and daily schedules for a variety of subjects at the primary education level;</p> <p>Teach basic skills such as reading, writing, and arithmetic to students using various teaching methods and tools;</p> <p>Establish and maintain classroom rules to create a positive and structured learning environment;</p> <p>Collaborate with other teachers and school staff to organize events, activities, and educational programs;</p> <p>Provide individualized attention and support to students who are struggling or require additional help;</p>

## Task-level scoring

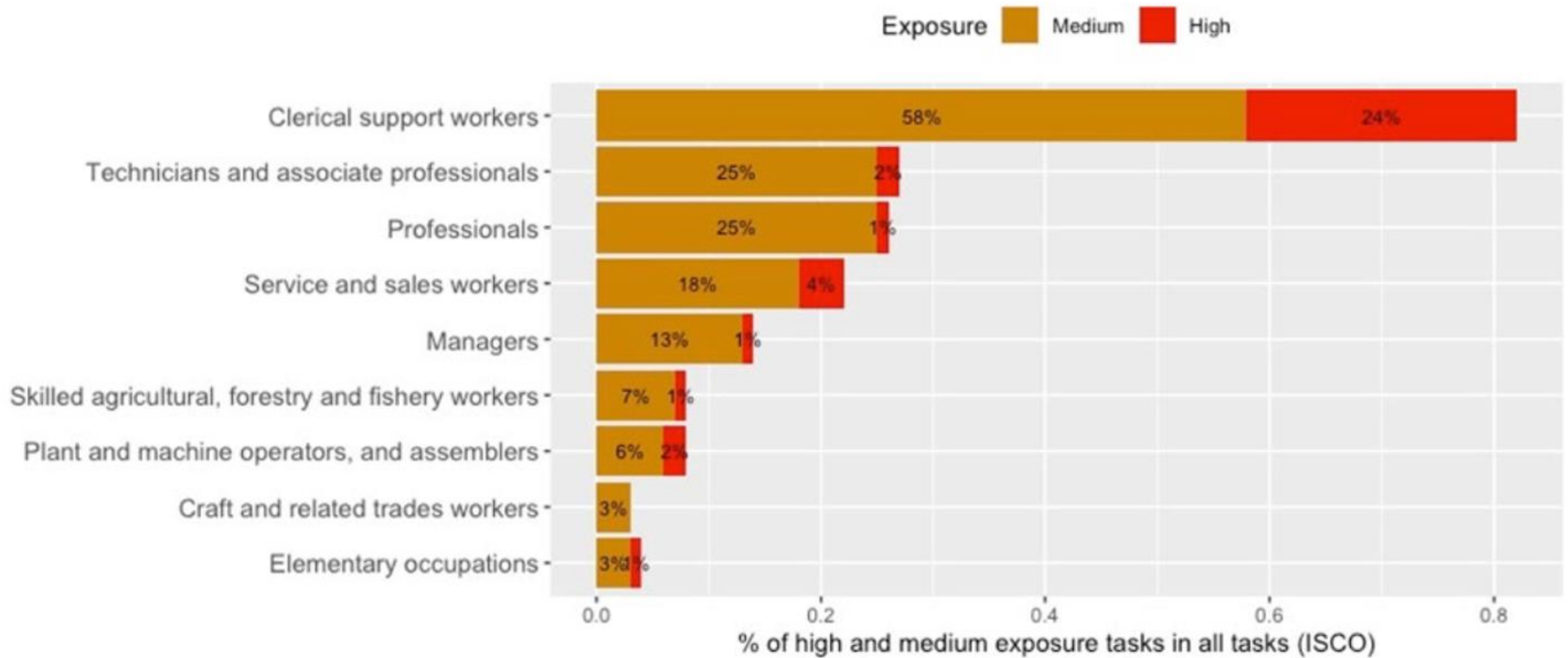
### Python API request (GPT-4):

```
{“role”: “system”, “content”: “You are a skills and AI specialist. ” + “You will provide a score of potential automation with GPT technology for a given task. Follow instructions closely.”},
```

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{“role”: “user”, “content”: “Look at this job task: ” + str(Tasks_GPT) + “It is related to ISCO code: ” + str(ISCO_08) + “Provide a score of potential automation of this task with GPT technology, given that the job is located in a high[low] income country: ” + “The score should range 0-1. Provide a score in one line, and a justification in next line. Do not provide any other commentary, only the score and justification. ” + “Do not give any ranges just one score for each task.”}
```

ISCO-08	ISCO Tasks		Justification by GPT
2341	Preparing daily and longer-term lesson plans in accordance with curriculum guidelines;	0.60	GPT technology can aid in the generation of lesson plans and offer suggestions based on curriculum guidelines, but a human teacher’s expertise and nuanced understanding of their students’ needs will still be important for crafting effective plans.
2341	Instructing children individually and in groups, using various teaching methods and materials (e.g. computers, books, games), adapting to children’s varying needs;	0.30	GPT technology can assist in providing instructional materials and adaptive learning approaches, but the physical presence, emotional connection, and real-time adaptability of a human teacher are essential for effectively teaching young children.
2341	Maintaining discipline and good working habits in the classroom;	0.15	GPT technology can assist in monitoring and providing feedback, but it cannot fully automate maintaining discipline and good working habits in the classroom because human interaction and physical presence are essential for effective discipline and enforcing rules.

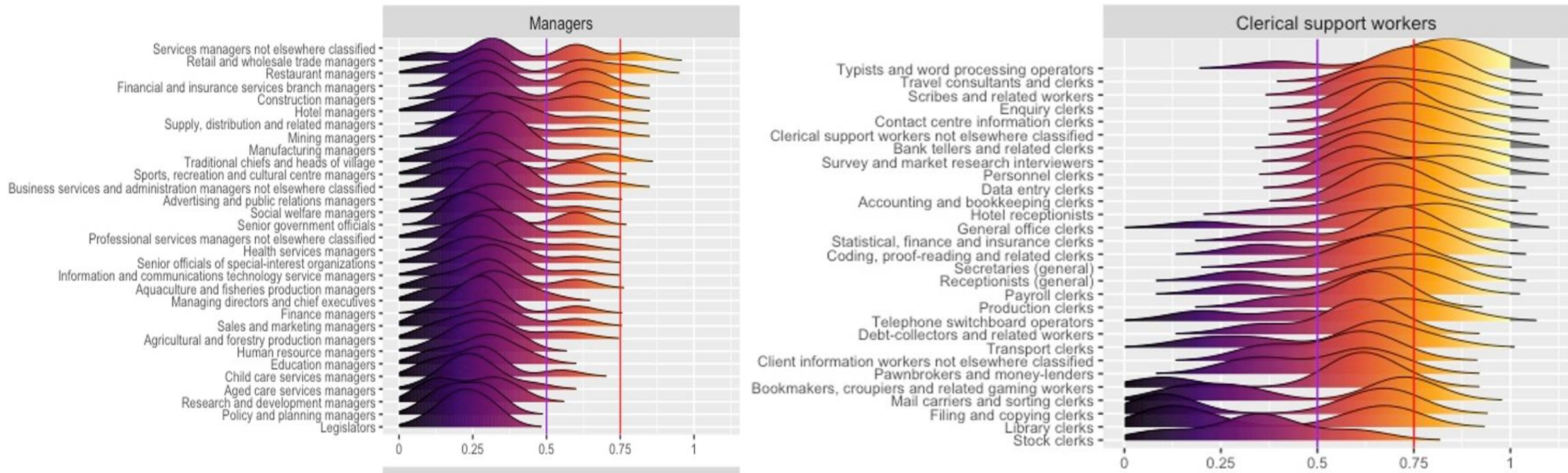
► **Figure 2. Tasks with medium and high GPT-exposure, by occupational category (ISCO 1-digit)**



Source: Gmyrek et al., 2023.

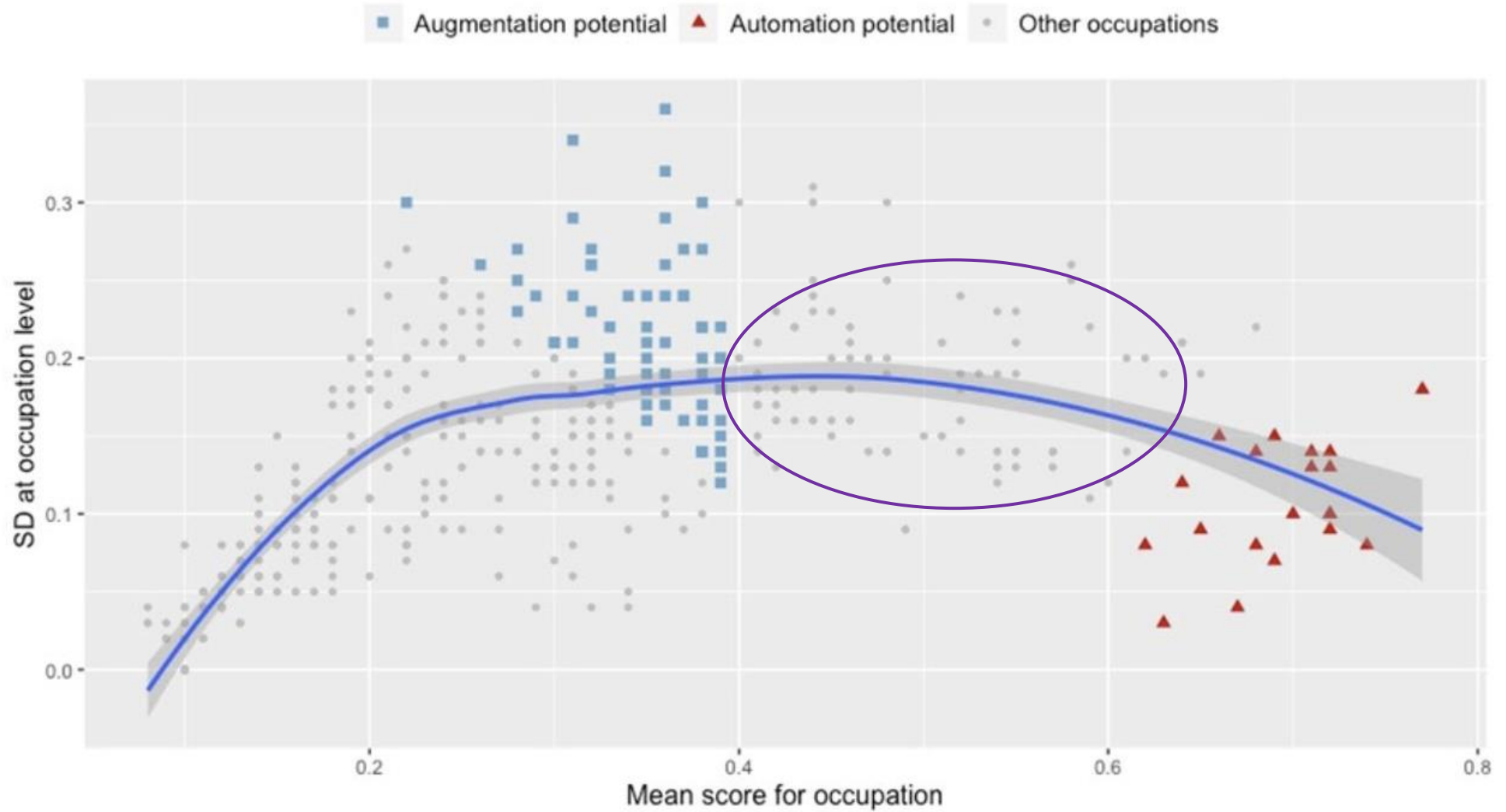


## Task-level exposure scores to GenAI technology by ISCO 4d -- managers and clerical support workers



Source: Gmyrek et al., 2023.

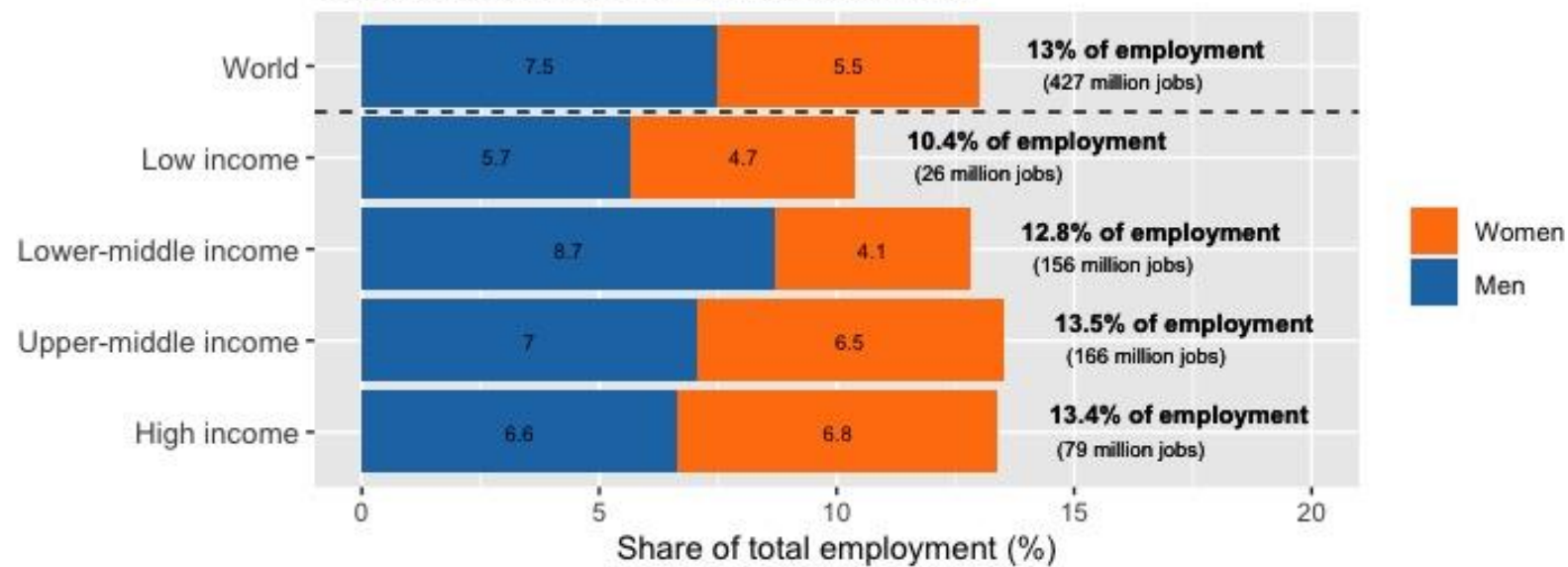
► **Figure 4. Augmentation vs automation potential at occupational level**



- ❖ Share of workforce **POTENTIALLY** affected (real impact will be much less)
- ❖ Does not account for new jobs that will be created!
- ❖ An additional 16% of employment at the junction of automation and augmentation

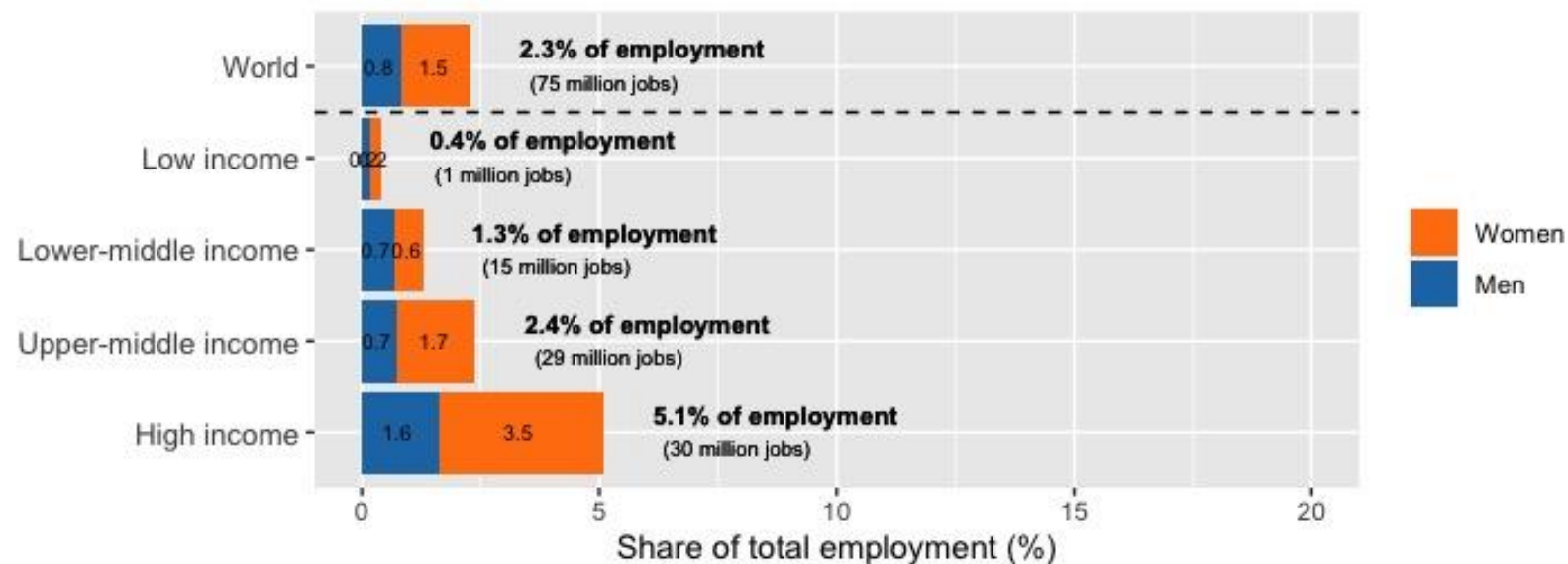
### Augmentation Potential

Global estimates: shares and numbers of jobs



### Automation Potential

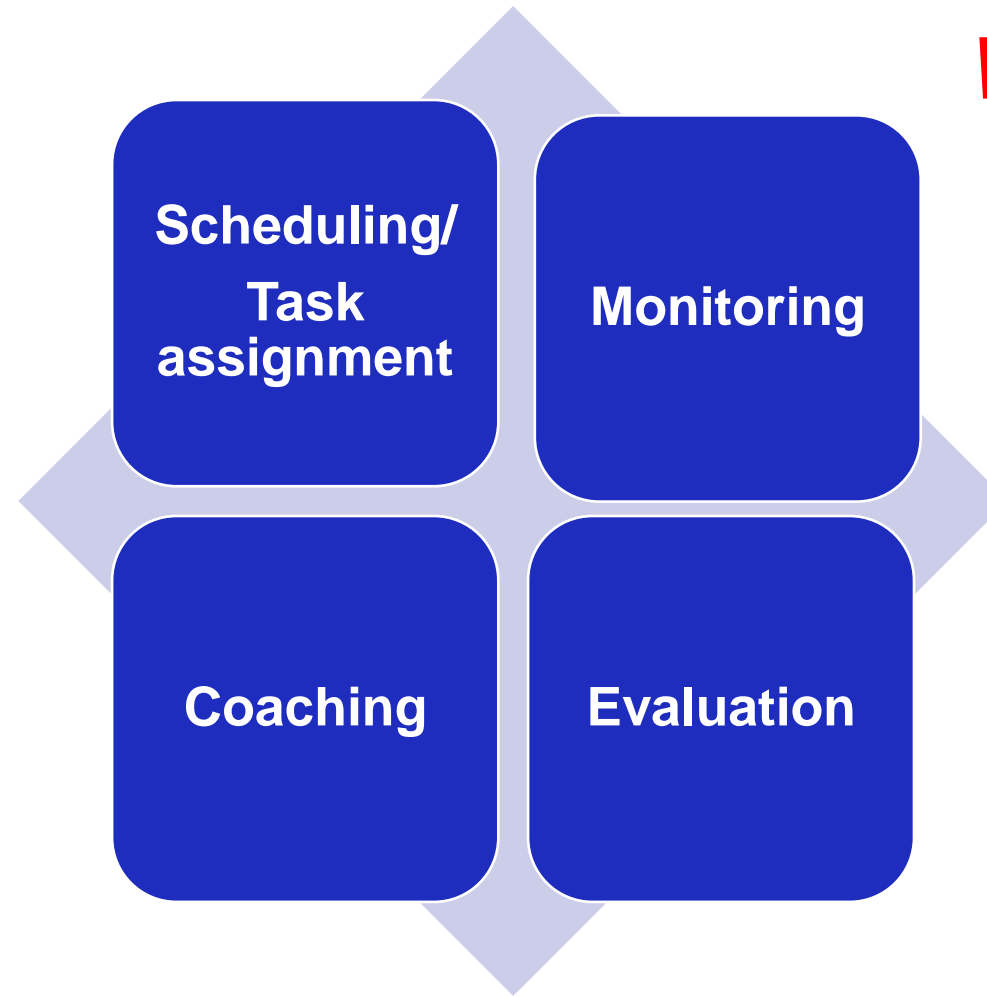
Global estimates: shares and numbers of jobs



## ► Many more jobs will be transformed – need to ensure good job quality

*«I have so many calls that I could fix the problem but they have removed my ability to modify equipment or processes.»*

*-Doellgast et al., 2023.*



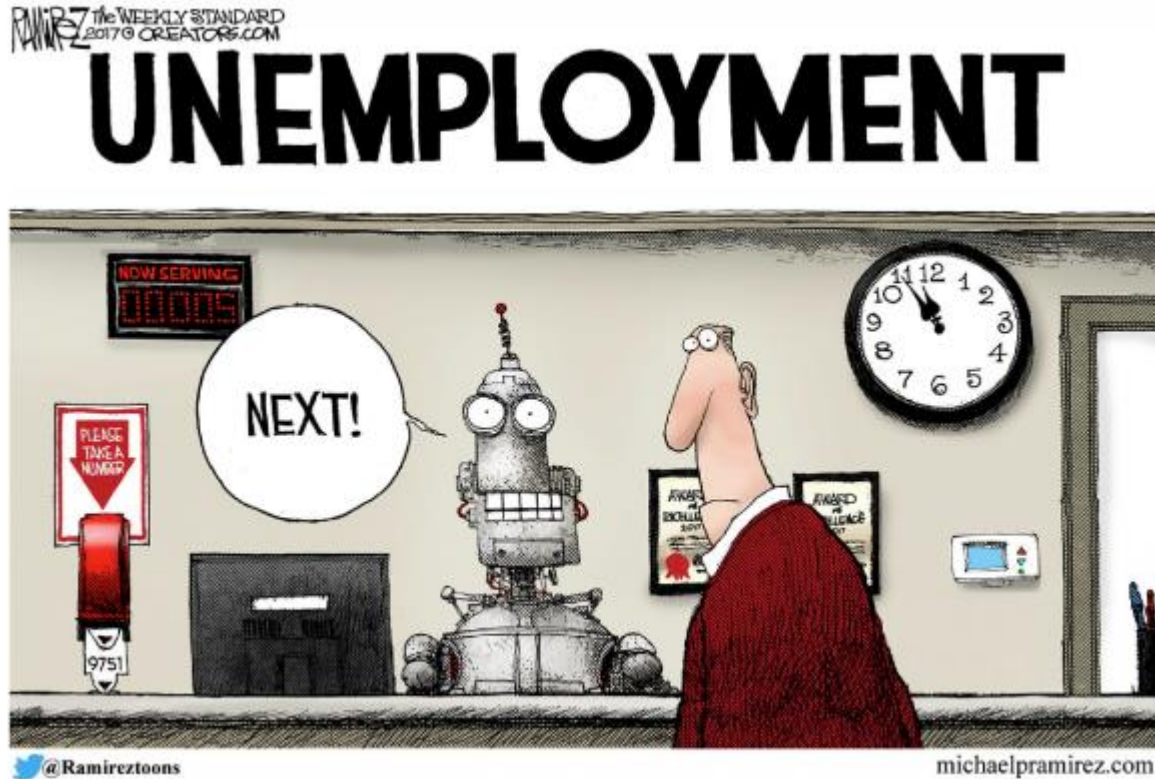
*Workers interacting  
with a system*



# AI and the world of work: The need for governance

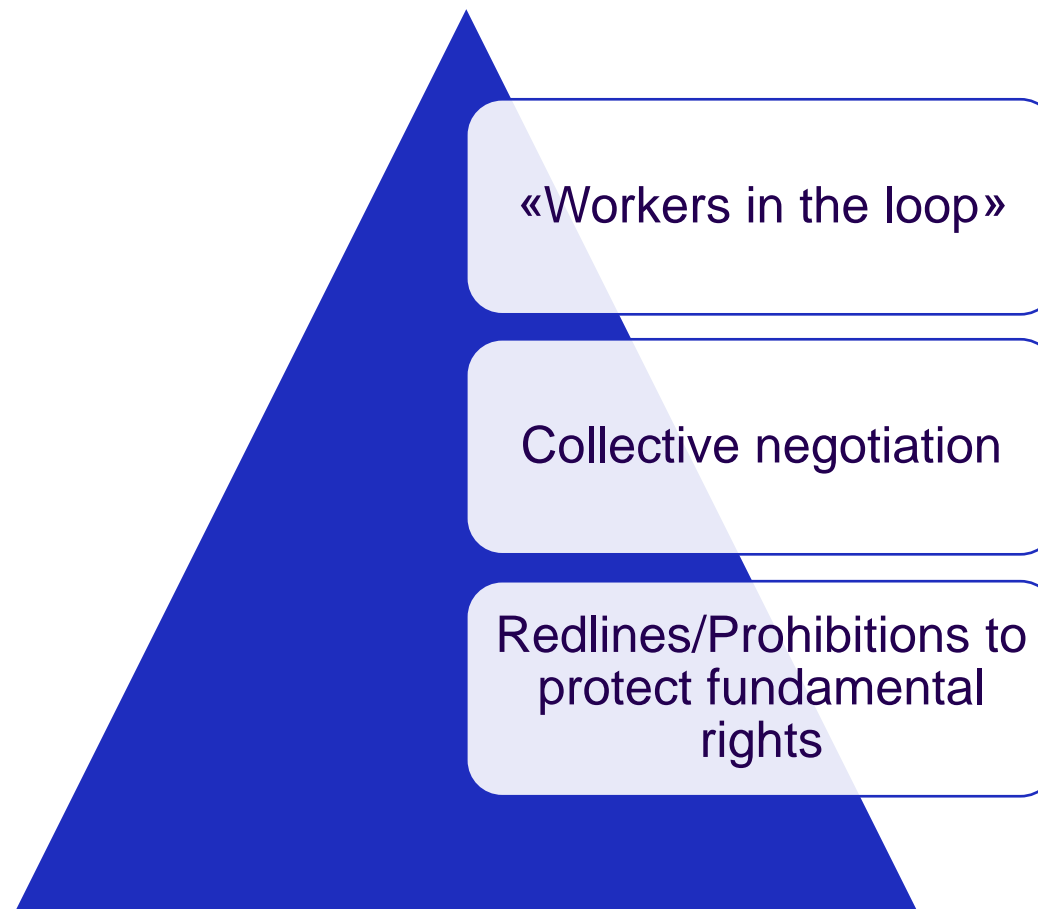


## Mitigating job loss and supporting workers that are affected



- Prioritize redeployment and training over job loss per Employment Protection Convention (No. 158) through social dialogue
- Strengthen active labour market policies, particularly life-long learning and income support for workers who are or may be displaced (shared responsibility)
- Invest in sectors that are under-funded and which have the potential to be a source of good quality jobs (care economy, green economy)

► **Six times as many jobs have the potential to be «augmented or transformed»**  
**Governance needed to ensure that the transformation is positive**



► **Redlines:** Prohibit behaviour that infringes upon fundamental rights, including freedom of association and anti-discrimination, in accordance with international labour standards



Prohibit employer monitoring of workers in particular contexts, including:

- (a) Outside of work (temporally or geographically)
- (b) Places where data collection or monitoring poses risks to human dignity, such as bathrooms
- (c) in private conversations or communications, especially conversations and communications with worker representatives (Adams-Prassl et al, 2023).

=> EU Platform directive: Prohibition of algorithmic dismissal.



## «*Workers in the loop*»

### Job quality improves when workers are involved in the design and integration of digital technologies at the workplace

Importance of workers' participation in the design process with scope for feedback and re-design (best practice in the Nordic countries).

Job security is fundamental.

**Collective bargaining** as a flexible means to address sectoral and occupation-specific risks of AI.



► **Thank you!**

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