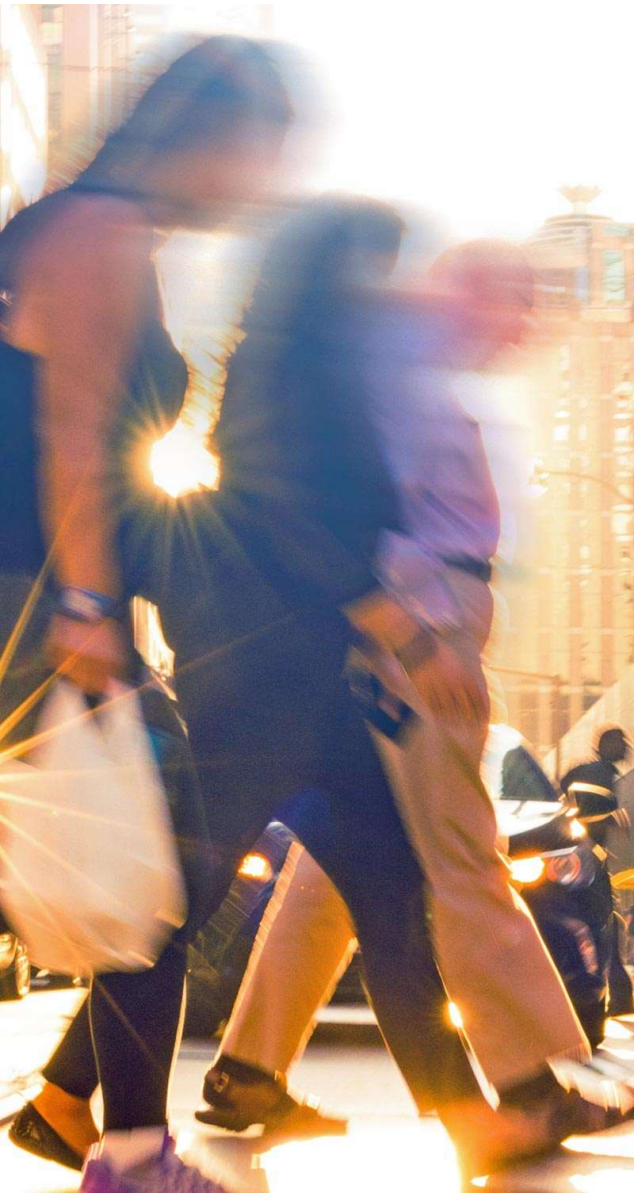

Surveying the landscape for AI use in occupational health and safety (OHS) in Ontario and British Columbia

IWH Speaker Series – March 25th, 2025

Arif Jetha PhD
Associate Scientific Director and Scientist

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Partners

Ministry of Labour Immigration, Training and Skills Development

Occupational Health Clinics for Ontario Workers Inc.

Public Services Health & Safety Association

Workplace Safety & Prevention Services

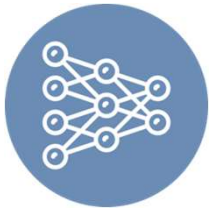
Research agenda on AI, Work and Health

AI research agenda areas

1. Understand the OHS implications of AI and the impact of decreasing human autonomy at work

- Evolving working conditions and workplace hazards
- Changing role of human workers

2. Advance responsible, safe and healthy AI from an OHS perspective



- AI design, training, implementation and health and safety
- Worker inequities and occupational hazards

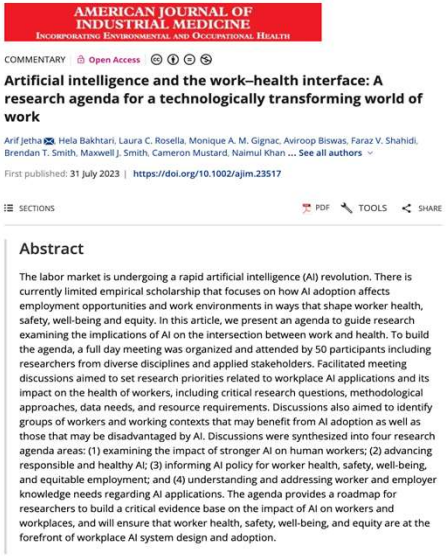
3. Build a policy-relevant evidence base on AI, worker health, safety and well-being

- Existing labour and OHS policy suitability
- Strategies to modernize policies

4. Examine and address worker knowledge needs related to AI and OHS

- Worker knowledge gaps
- Protective supports and strategies

American Journal of Industrial Medicine



AMERICAN JOURNAL OF INDUSTRIAL MEDICINE
INCORPORATING ENVIRONMENTAL AND OCCUPATIONAL HEALTH

COMMENTARY | Open Access

Artificial intelligence and the work–health interface: A research agenda for a technologically transforming world of work

Arif Jetha, Hela Bakhtari, Laura C. Rosella, Monique A. M. Gignac, Aviroop Biswas, Faraz V. Shahidi, Brendan T. Smith, Maxwell J. Smith, Cameron Mustard, Naimul Khan ... See all authors

First published: 31 July 2023 | https://doi.org/10.1002/ajim.23517

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Abstract

The labor market is undergoing a rapid artificial intelligence (AI) revolution. There is currently limited empirical scholarship that focuses on how AI adoption affects employment opportunities and work environments in ways that shape worker health, safety, well-being and equity. In this article, we present an agenda to guide research examining the implications of AI on the intersection between work and health. To build the agenda, a full day meeting was organized and attended by 50 participants including researchers from diverse disciplines and applied stakeholders. Facilitated meeting discussions aimed to set research priorities related to workplace AI applications and its impact on the health of workers, including critical research questions, methodological approaches, data needs, and resource requirements. Discussions also aimed to identify groups of workers and working contexts that may benefit from AI adoption as well as those that may be disadvantaged by AI. Discussions were synthesized into four research agenda areas: (1) examining the impact of stronger AI on human workers; (2) advancing responsible and healthy AI; (3) informing AI policy for worker health, safety, well-being, and equitable employment; and (4) understanding and addressing worker and employer knowledge needs regarding AI applications. The agenda provides a roadmap for researchers to build a critical evidence base on the impact of AI on workers and workplaces, and will ensure that worker health, safety, well-being, and equity are at the forefront of workplace AI system design and adoption.

IWH News Article

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What's new

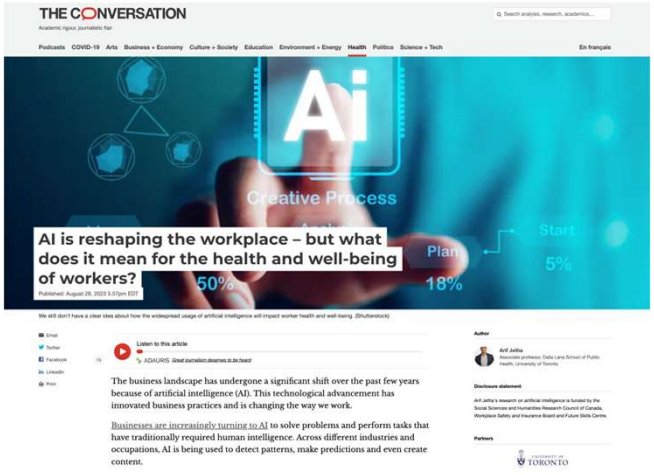
IWH researchers create roadmap for AI research that prioritizes worker health

A four-part agenda highlights key research areas to address AI's effects on worker health and wellbeing

Published: August 31, 2023

In the fall of 2022, an Institute for Work & Health (IWH) team brought together a group of experts to discuss a rapidly evolving topic that will have increasingly pronounced impacts on the lives of workers: artificial intelligence (AI). As AI continues to advance at a rapid pace, and as more workers have aspects of their jobs performed by or with the help of AI, the question ever-present in the minds many is how AI will impact workers' health, safety and wellbeing, and how these impacts will be distributed

Conversation Canada Article



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AI is reshaping the workplace – but what does it mean for the health and well-being of workers?

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The business landscape has undergone a significant shift over the past few years because of artificial intelligence (AI). This technological advancement has innovated business practices and is changing the way we work.

Businesses are increasingly turning to AI to solve problems and perform tasks that have traditionally required human intelligence. Across different industries and occupations, AI is being used to detect patterns, make predictions and even create content.

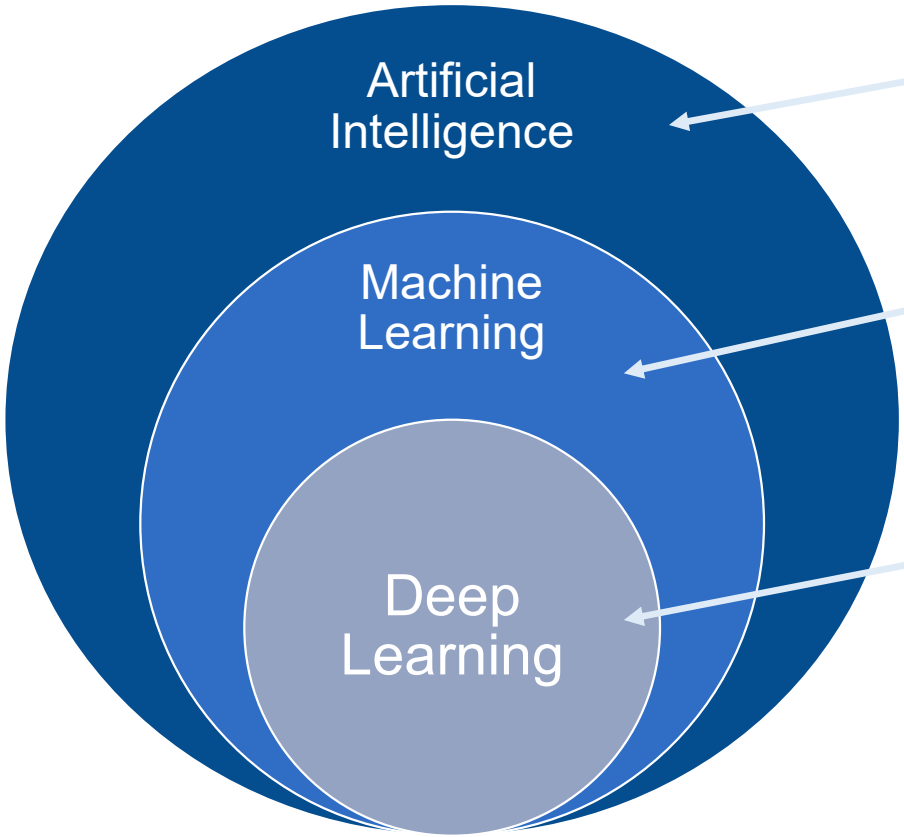
Author

Disclosure statement

Partners

Background on AI and OHS

AI as a series of systems



Systems that solve problems traditionally requiring human intelligence

Application of statistical algorithms to large amounts of data to detect patterns in data, make predictions, generate decisions, or optimize processes

Neural networks to simulate the complex decision-making power of the human brain

AI building blocks

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AI at work

Augment

Automate

Optimize

Reorganize

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Documented AI risks

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AI to optimize health, safety and well-being?

Detect	Rapidly predict potential workplace risks or adverse events
Diagnose	Diagnose the root cause of an OHS incident and support evidence-based OHS decision-making
Eliminate	Perform the most hazardous job tasks across a range of occupations to remove workers from unsafe situations

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Jetha et al., 2025 (under review)

To what extent are health and safety professionals using AI for OHS within their organizations?

How do health and safety professionals perceive AI and how are perceptions of AI associated with AI use for OHS?

What are the firm-level factors most significantly associated with AI use for OHS?

Data collection summary

Participants
- Ontario or British Columbia
- ≥ 18 yrs of age
- OHS professional role

Recruitment
- Leger Opinion panel

Online survey
- ~ 20-minutes
- AI use .perceptions
- Firm characteristics
- OHS context

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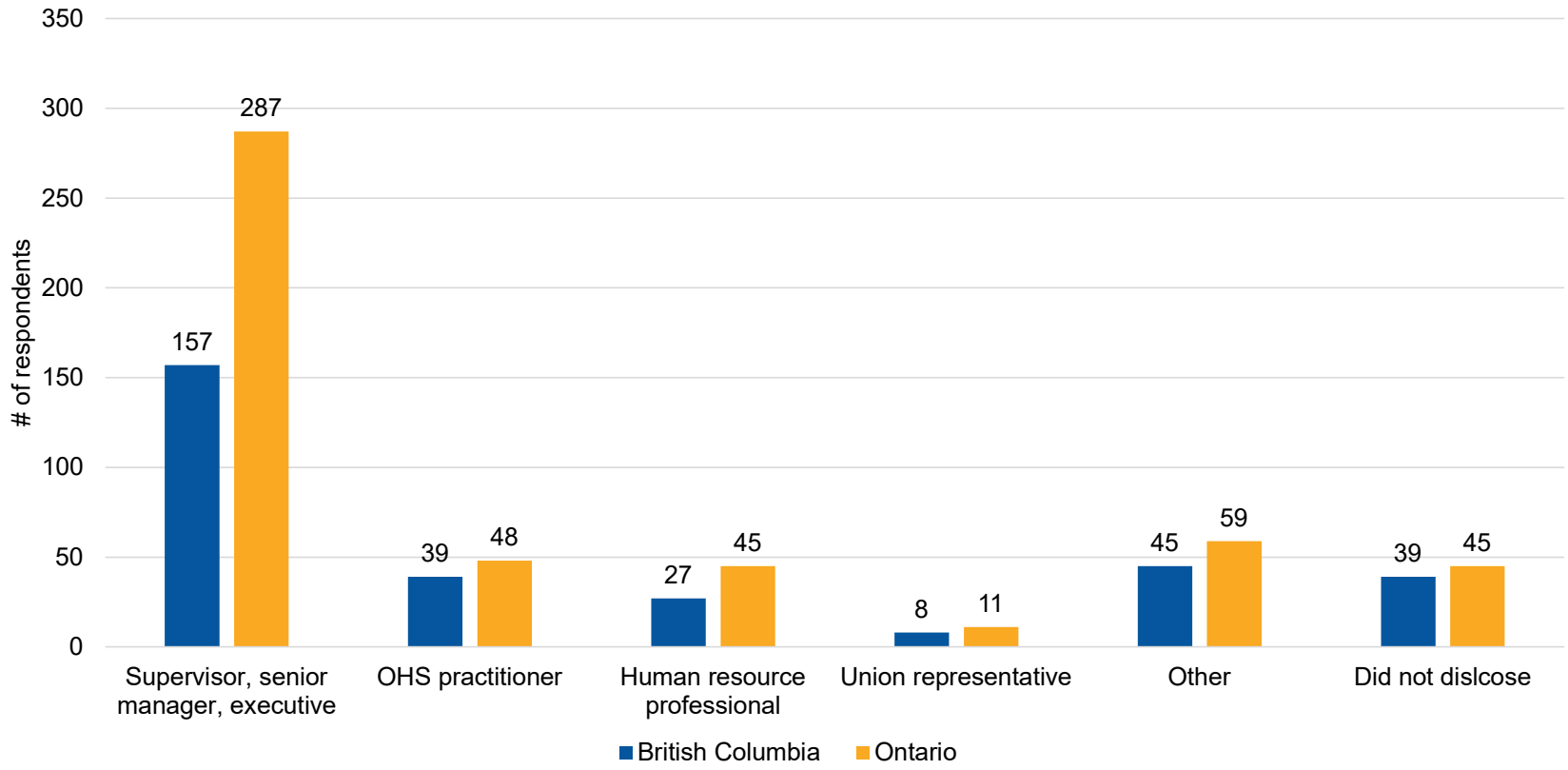
810 Respondents



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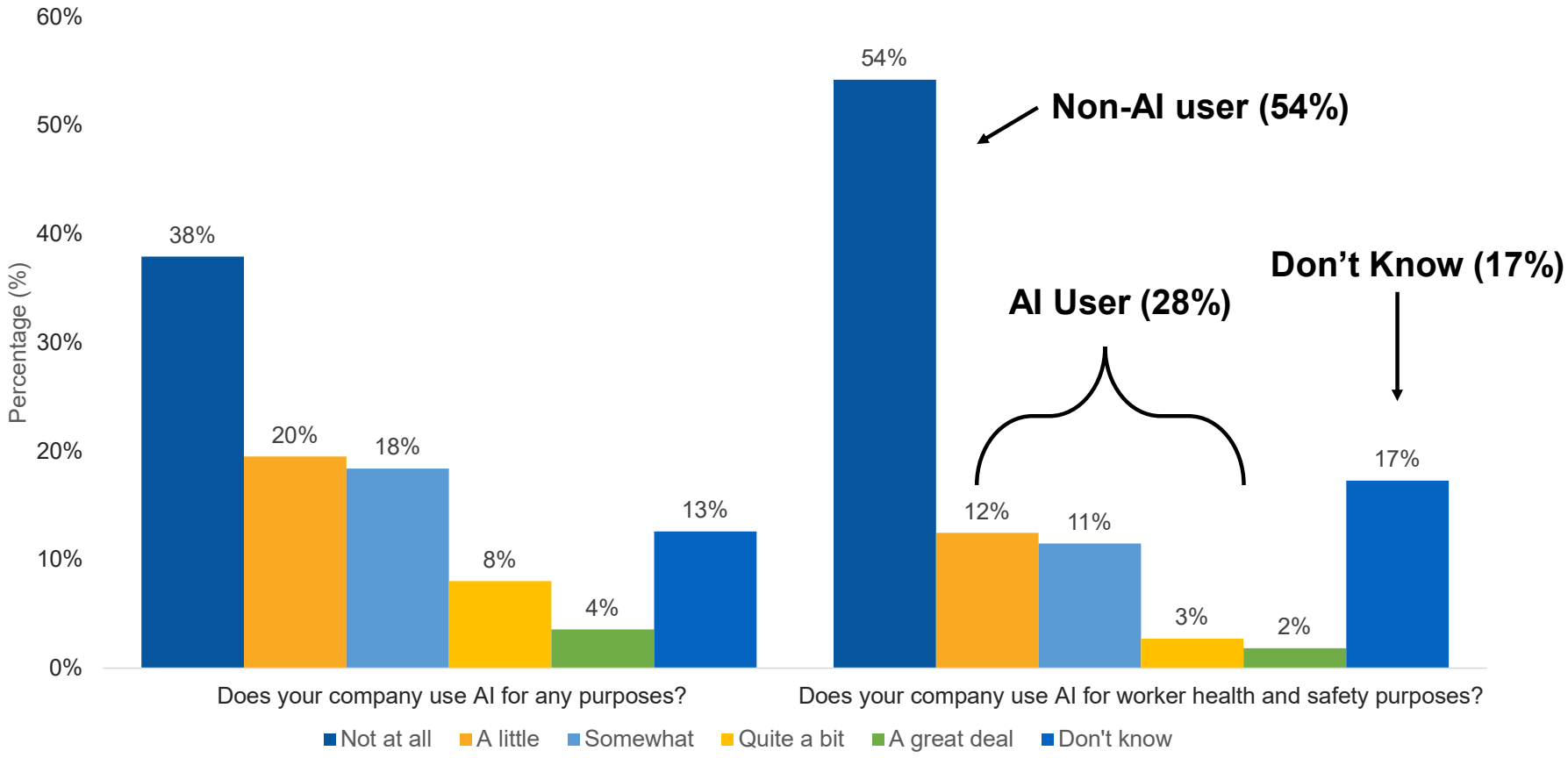
AI use and perceptions of AI

Use of AI for OHS



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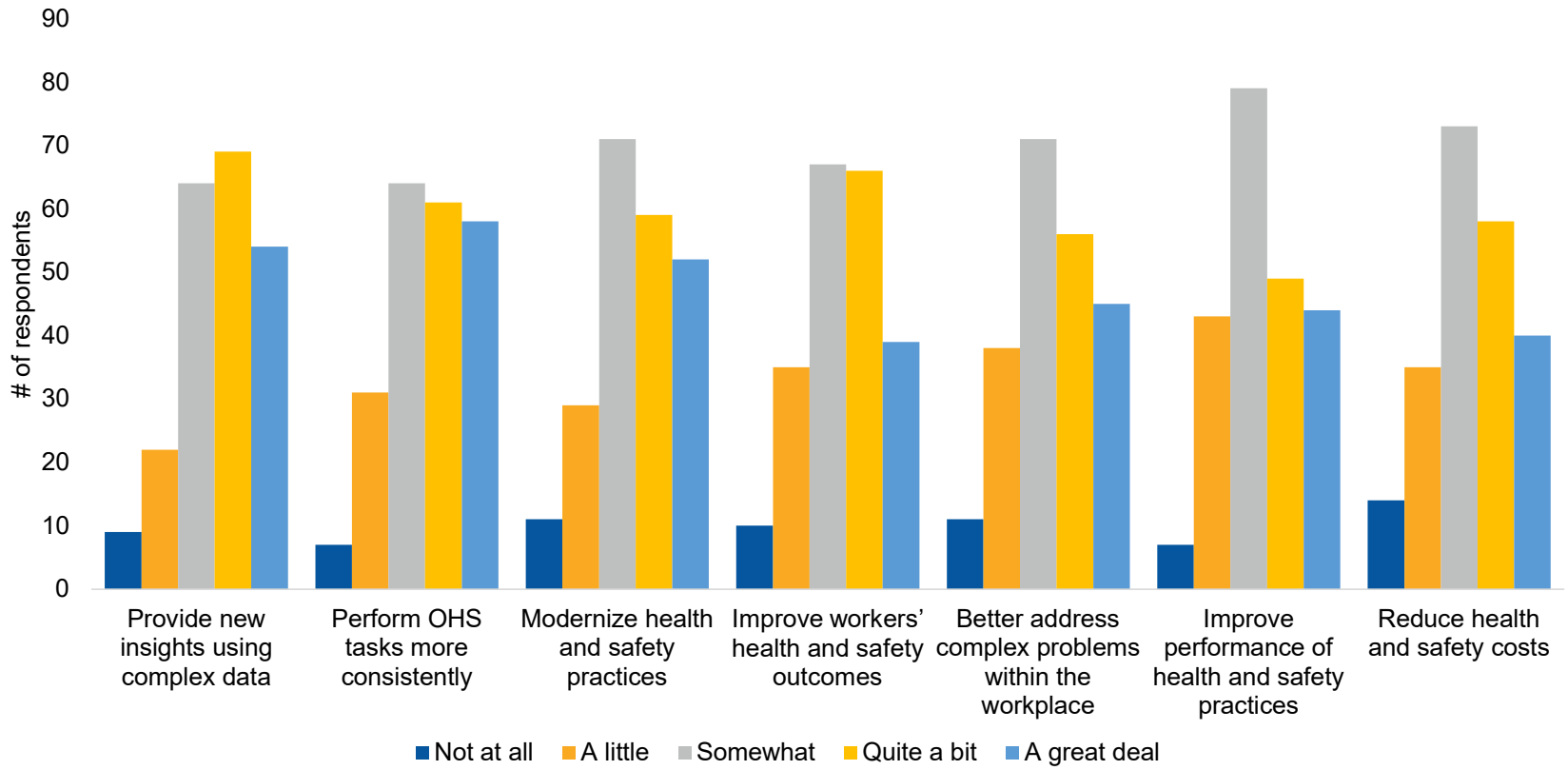
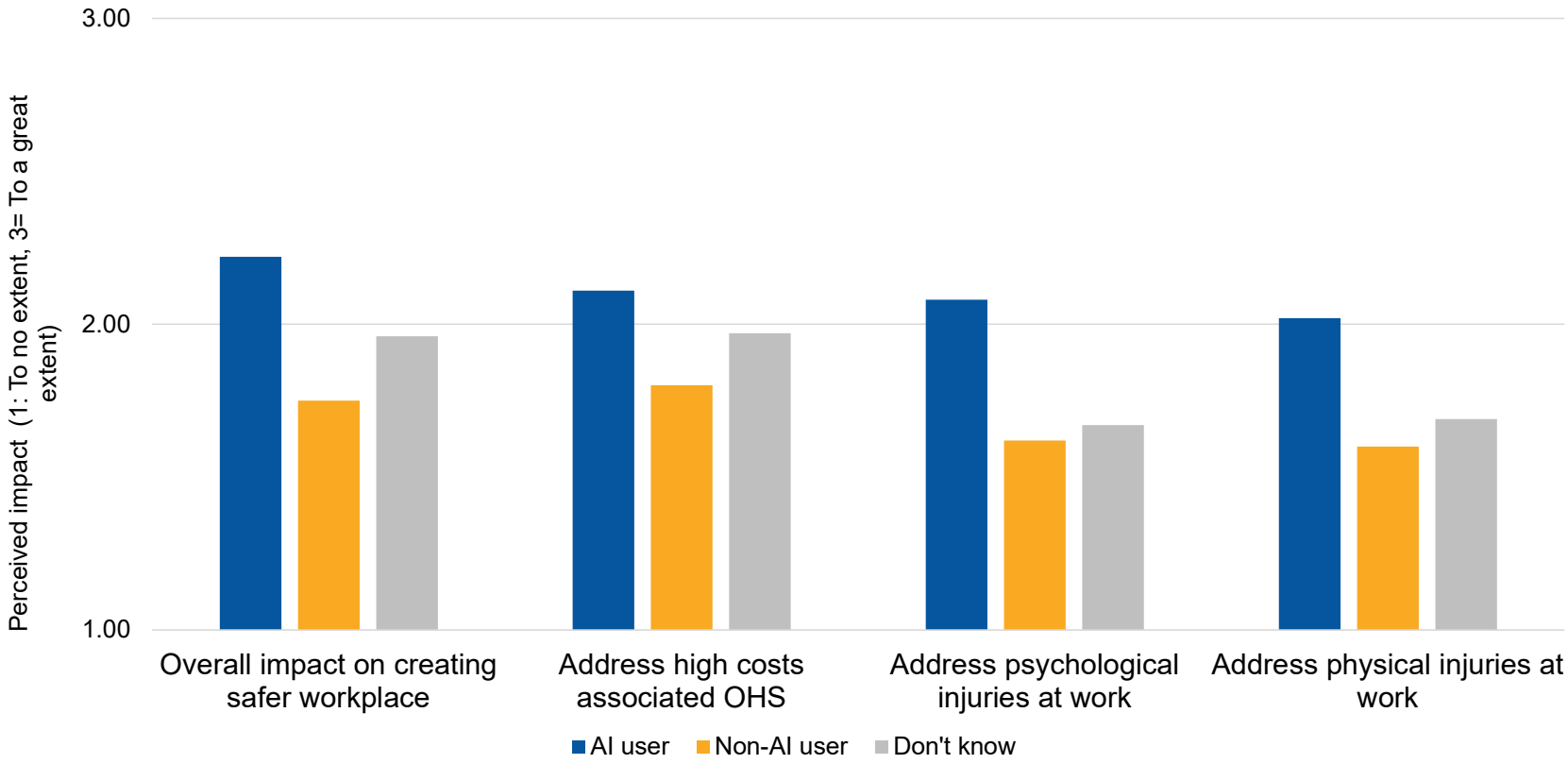
How was AI used for OHS? (N = 231)

What motivated workplaces to adopt AI for OHS? (N = 231)



Perceived Impact of AI on OHS outcomes



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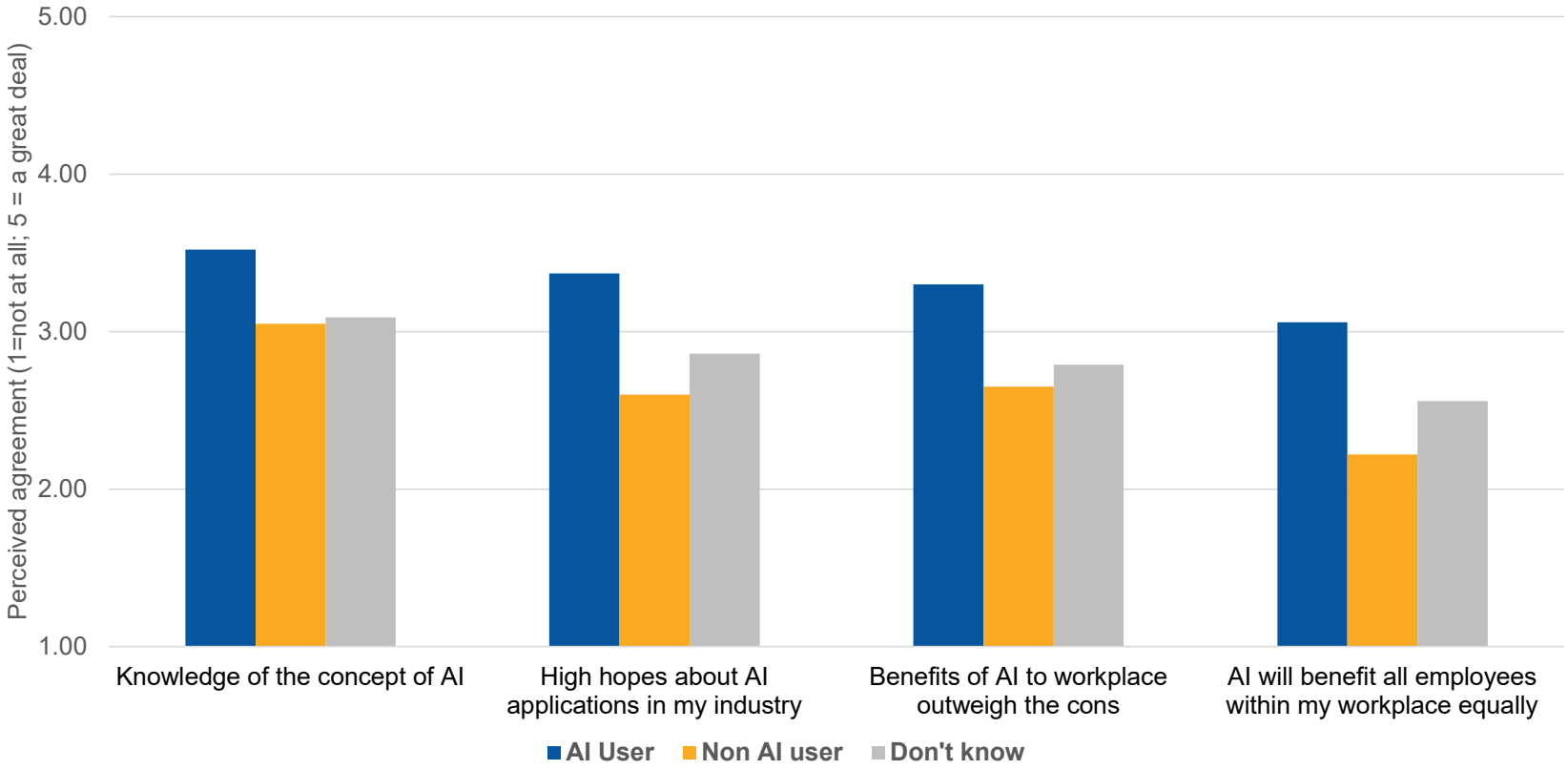
Note: Statistically significant differences at p<.05

Perceptions of AI (1/2): Knowledge and benefits of AI



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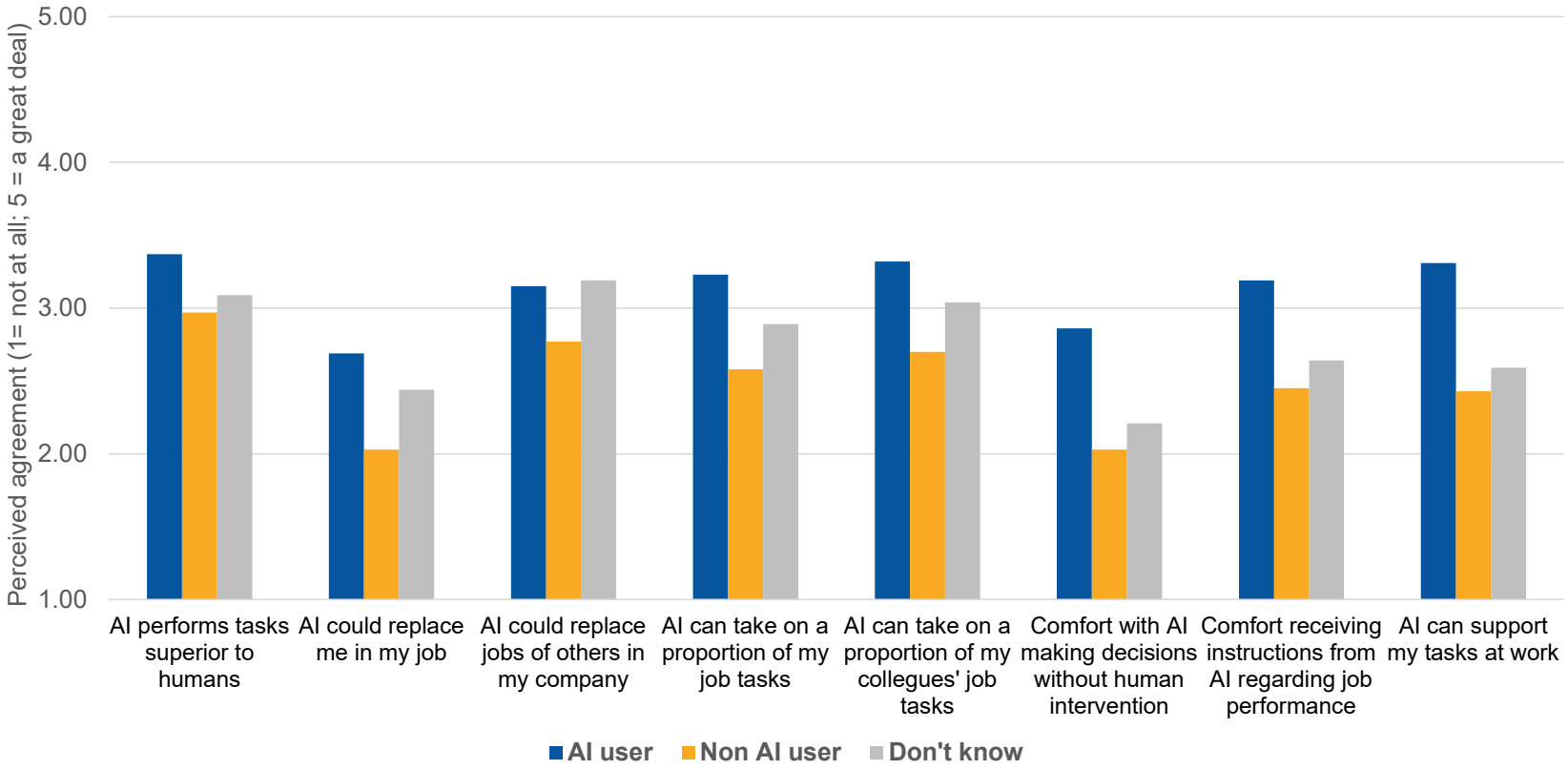
Perceptions of AI (2/2): Performing tasks at work



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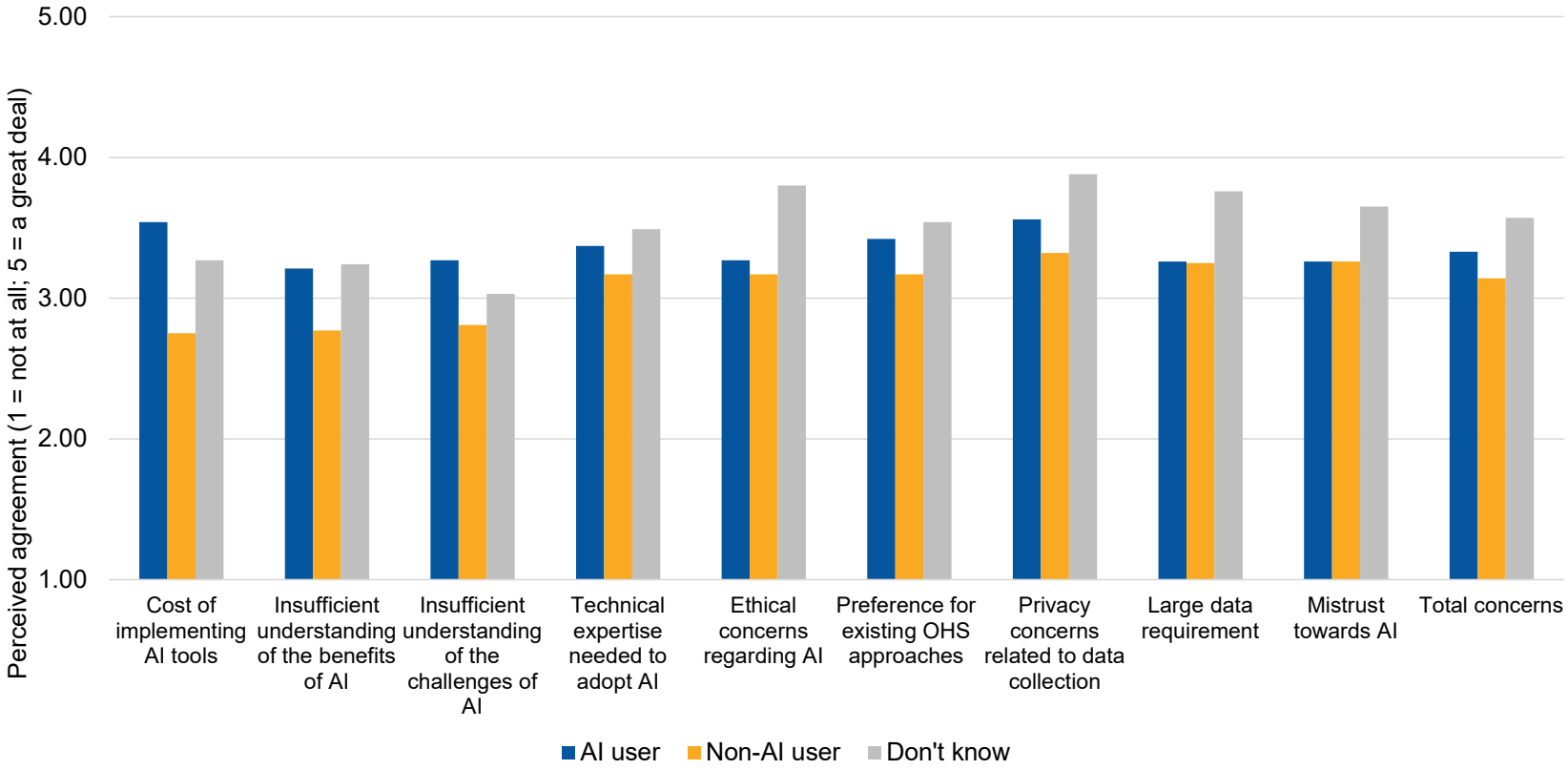
AI concerns



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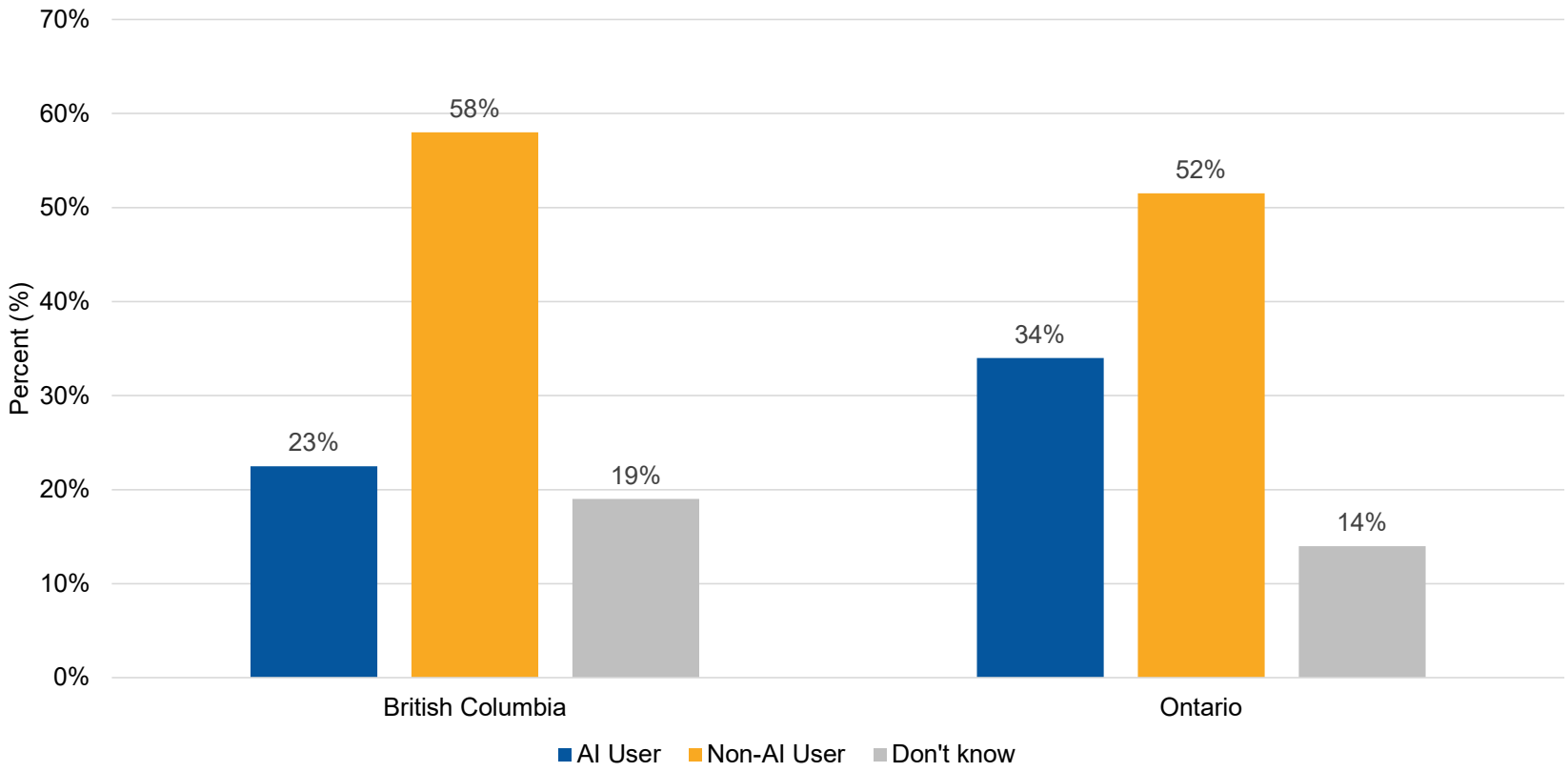
Firm-level characteristics of OHS AI use

Firm province and AI use for OHS



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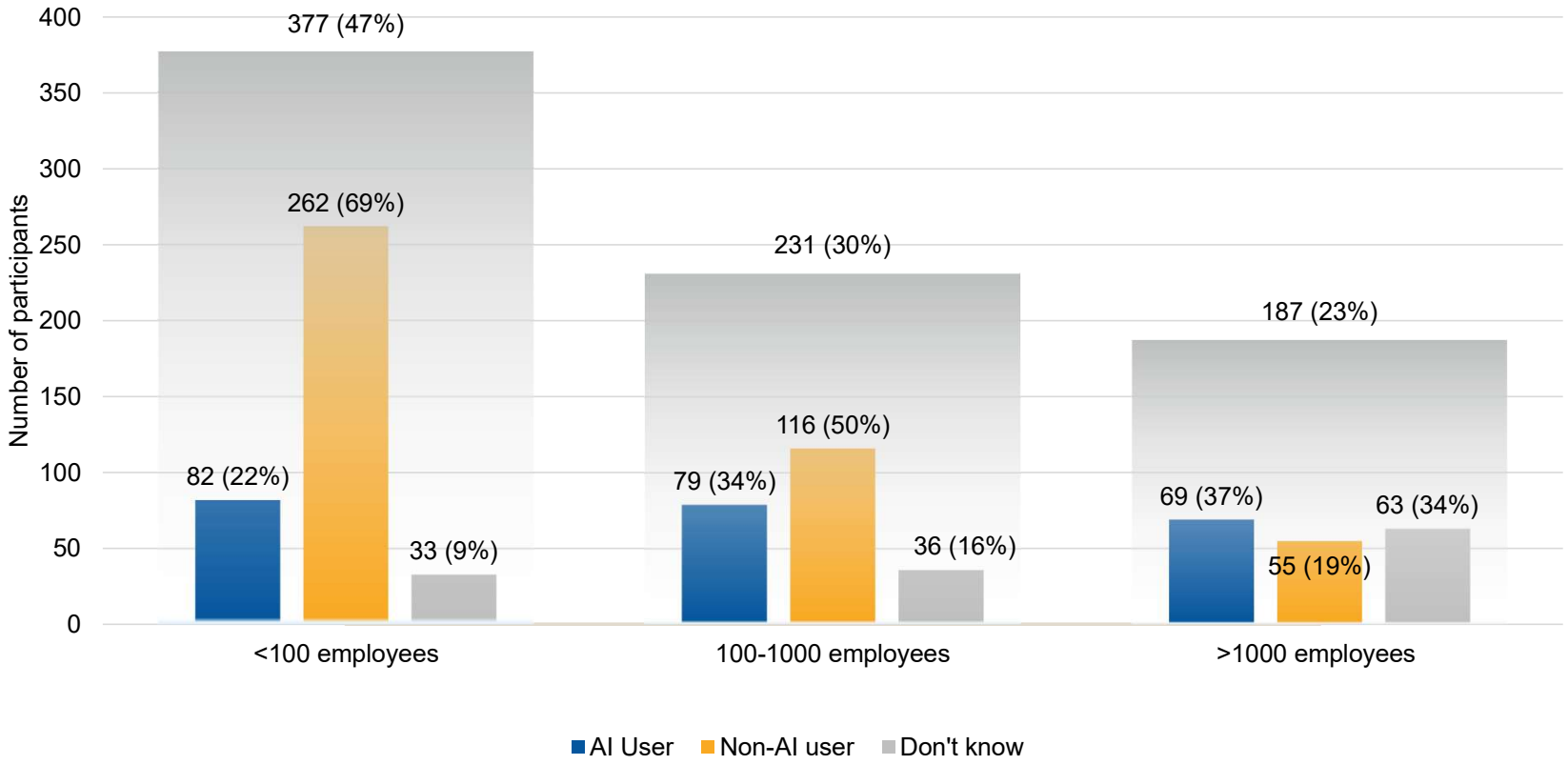
Firm size and AI use for OHS



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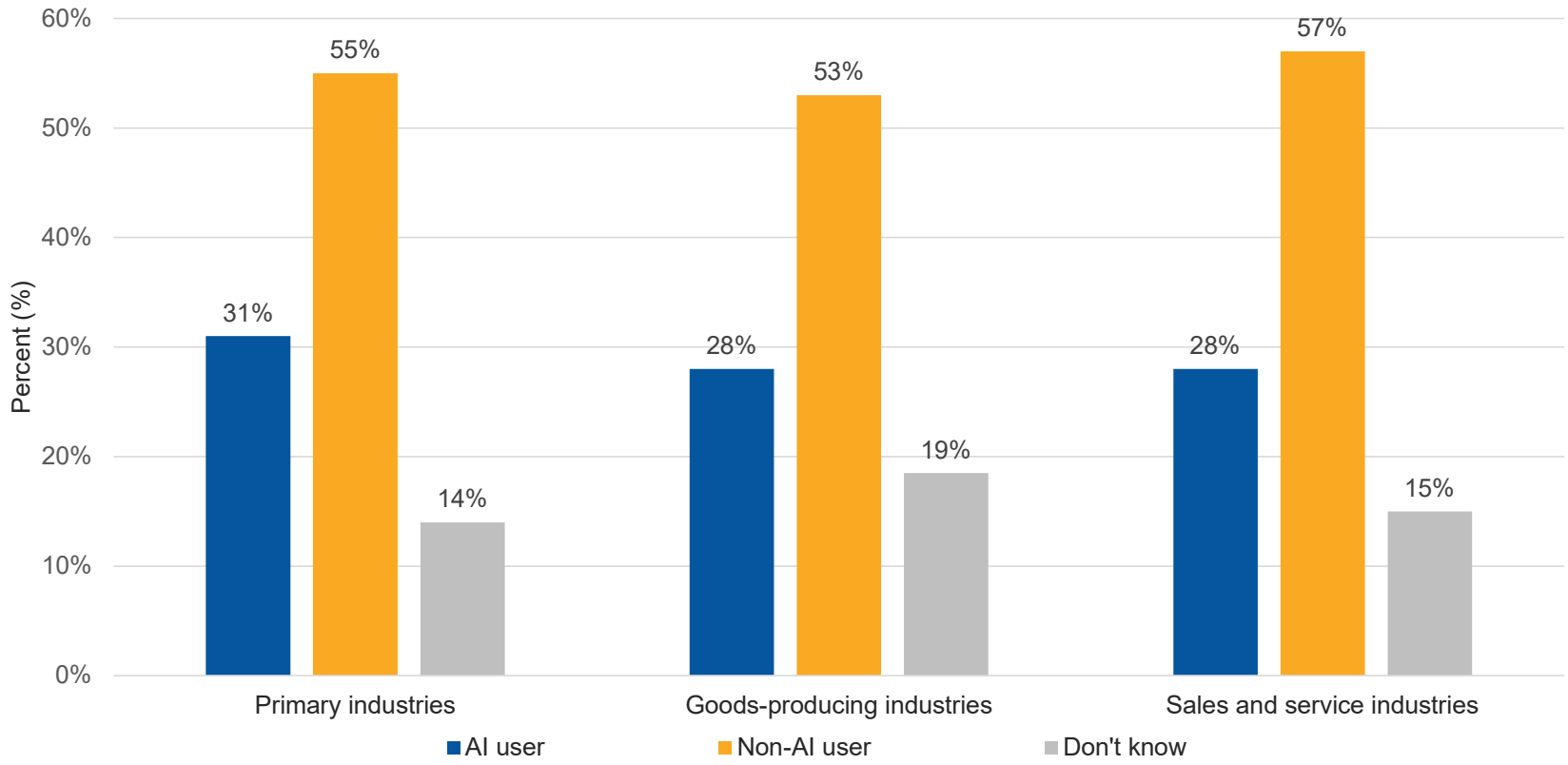
Industry and AI use for OHS



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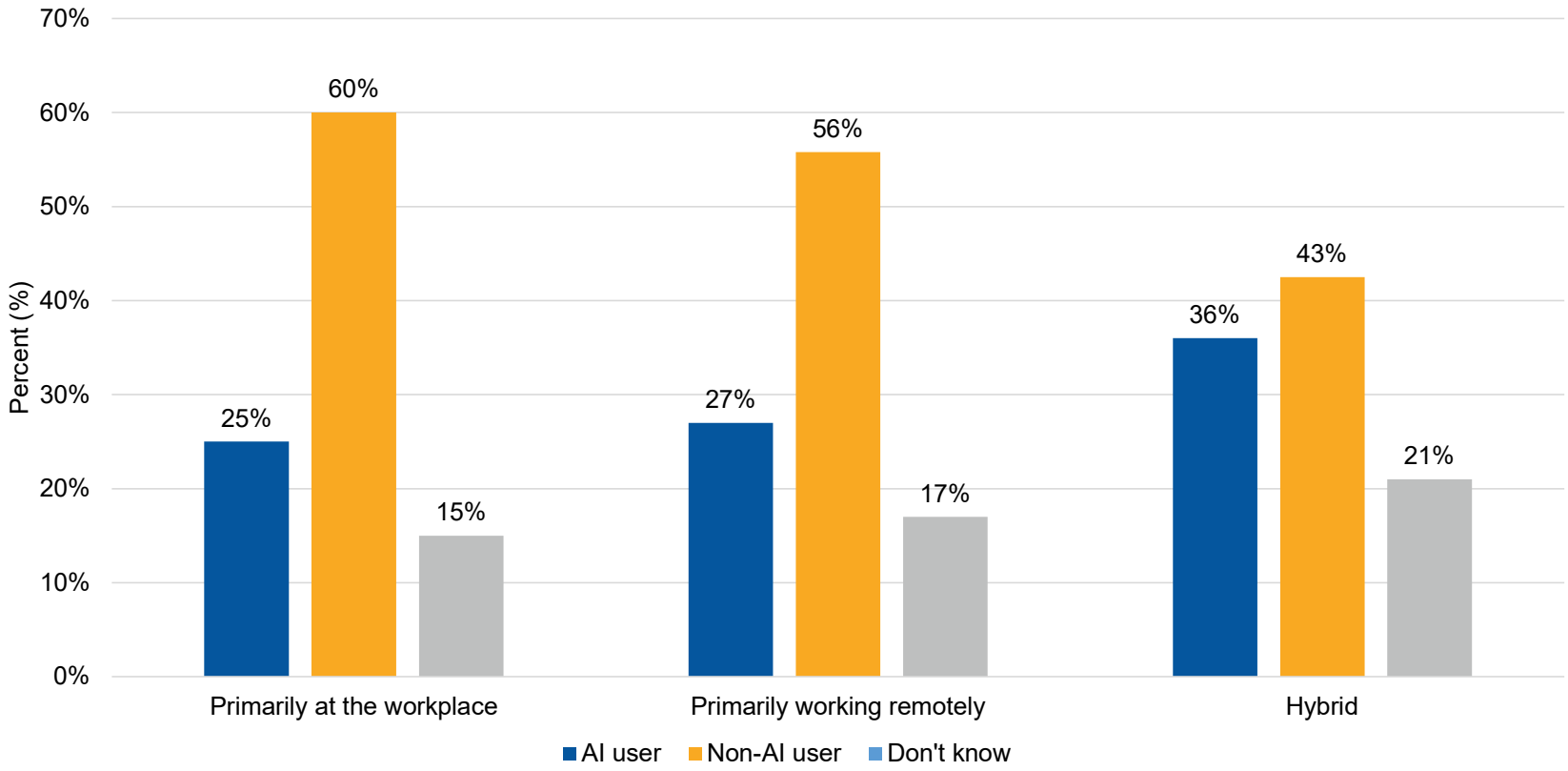
Work location and AI use for OHS



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Firm-level OHS Context

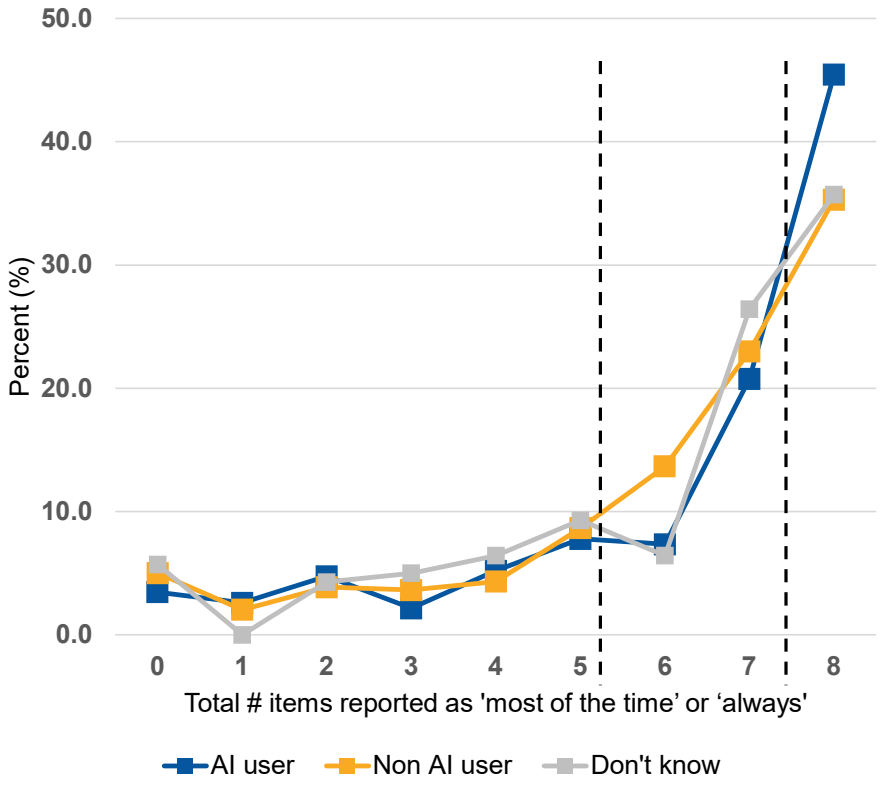
Organizational strategies for OHS

Eight items

Example items

- Unsafe conditions are addressed
- Work cleanliness
- Equipment maintenance
- Supervisor responsiveness to unsafe behaviours
- Organizational OHS response *and* leadership
- Trained supervisors
- Tracking of lost-time injuries

Frequency to which an organizational strategy is implemented



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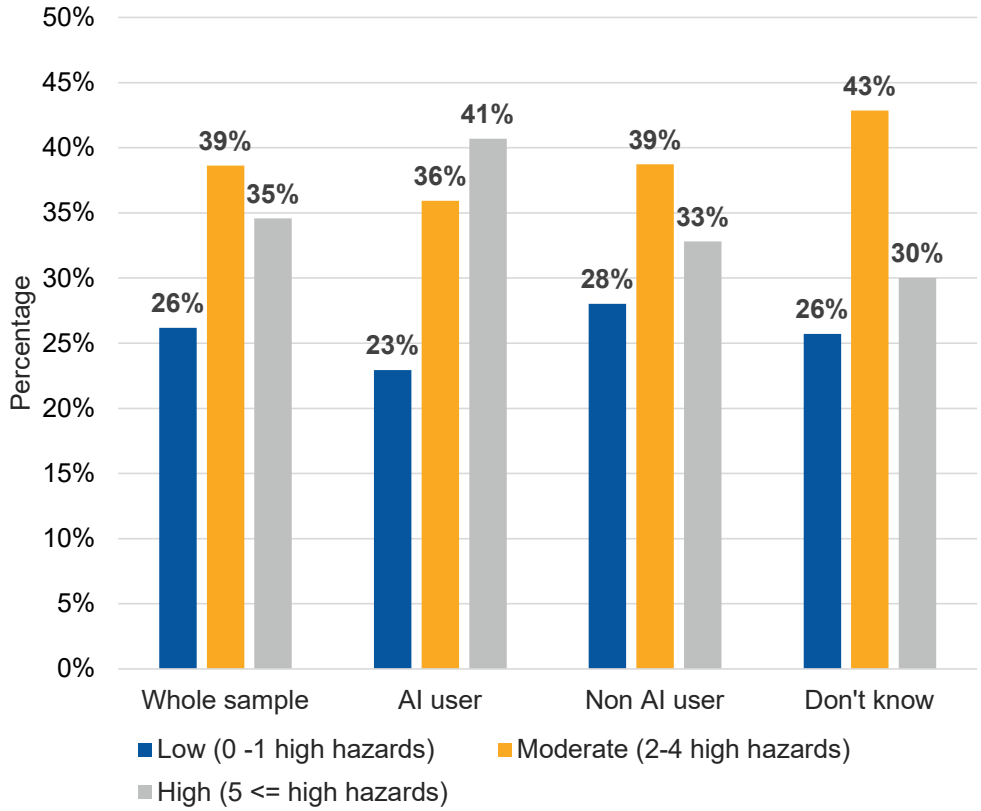
Hazardousness of workplace

Ten items

Example items

- Requirement for heavy lifting
- Repetitive tasks
- Unfamiliar work tasks
- Exposure to hazardous chemicals
- Working in awkward positions
- Standing for ≥ 2 hours
- Working from heights
- Noise
- Bullying and harassment
- Vapor, gas, dust exposures

Frequency of hazard exposure



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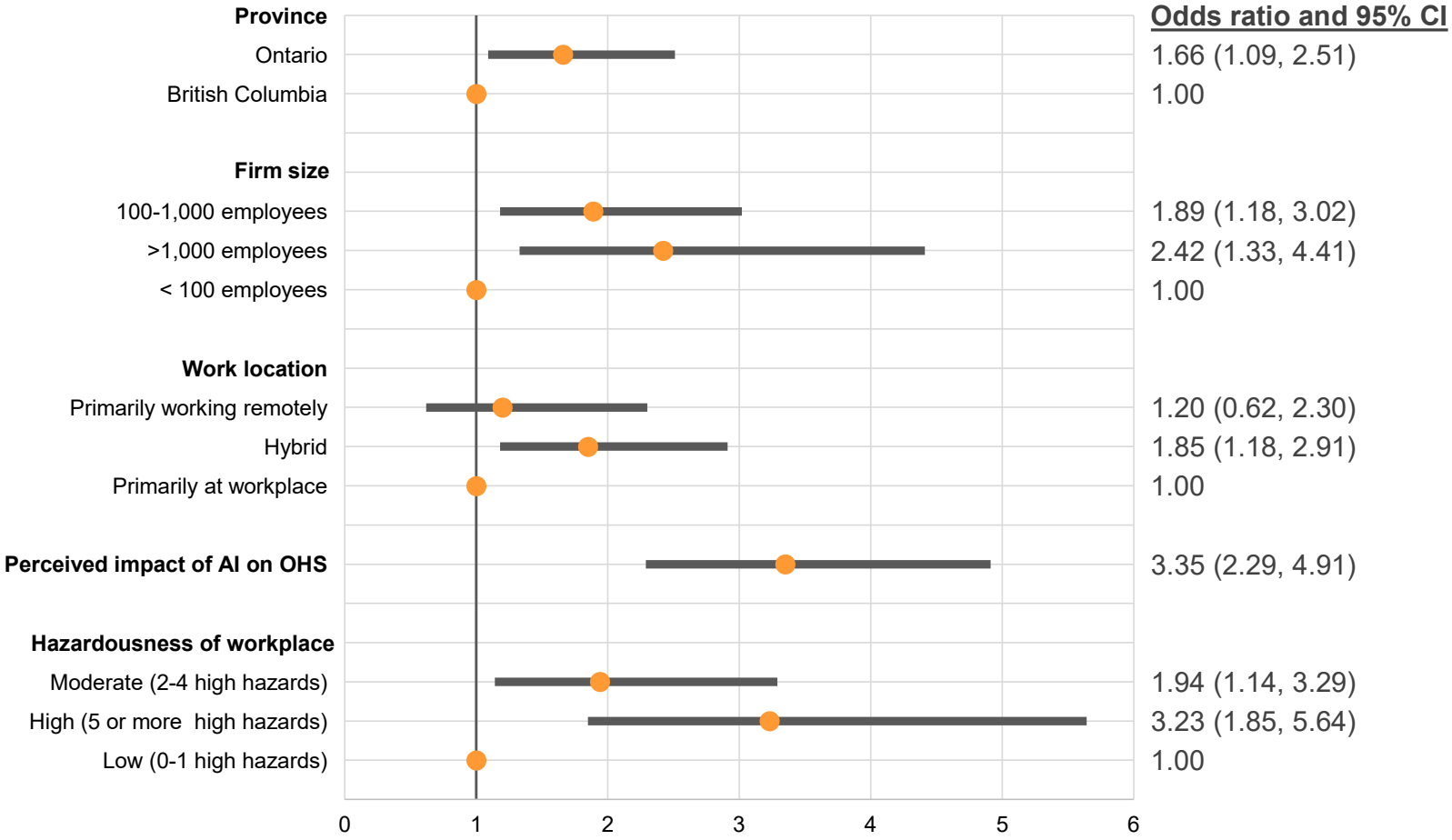
Factors associated with the likelihood of AI use for OHS: Multivariable model findings



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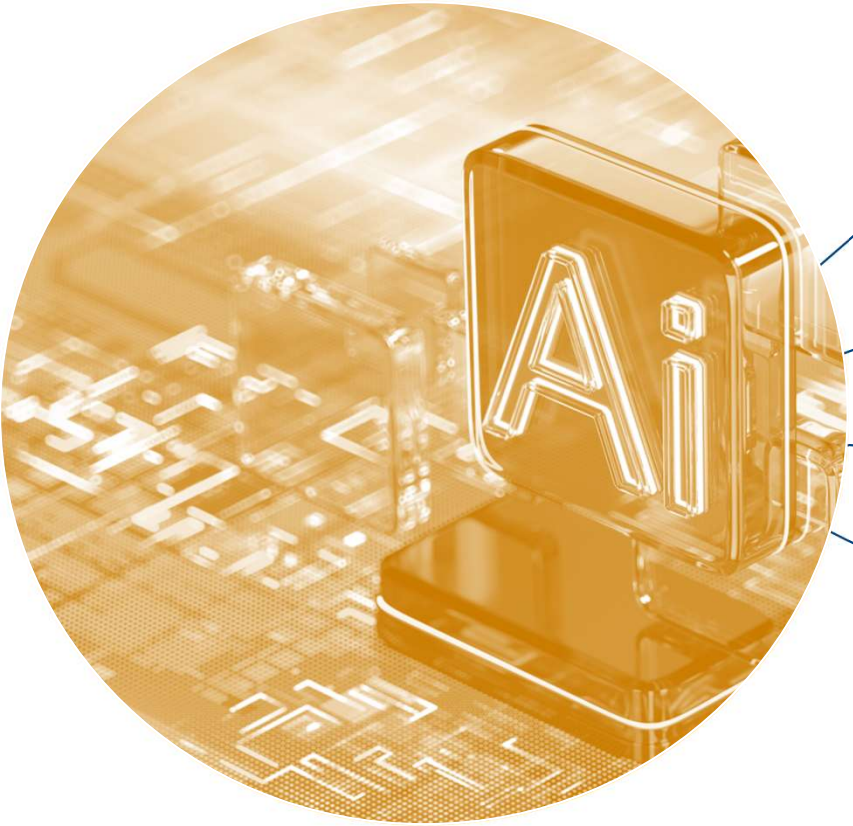
Model also adjusted for AI concerns, organizational OHS policies and systems, strategies to avoid workplace hazards, firm gender breakdown, union representation, industry;
Note: Participants who didn't know about their firm's AI use were removed from final models.

Discussion



AI use in OHS is not commonplace

Most hazardous workplaces may look to AI to address complex OHS challenges

Larger organizations may have more resources to allocate towards OHS innovation

Hybrid workplaces may be required to turn to new technologies

Next steps

Research

- Determine the utility of AI for a range of OHS problems
- Explore the utility of AI for OHS across a range of firms
  - Medium and small-sized firms
  - Firms with diverse hazard profiles
  - Worker demographic profiles
- Examine AI risks from an OHS lens

Practice

- Build AI literacy for OHS professionals
- Scan ongoing AI advancement

Thank you

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