Generative artificial intelligence and its potential impact on immigrant workers: Uncertainties and opportunities

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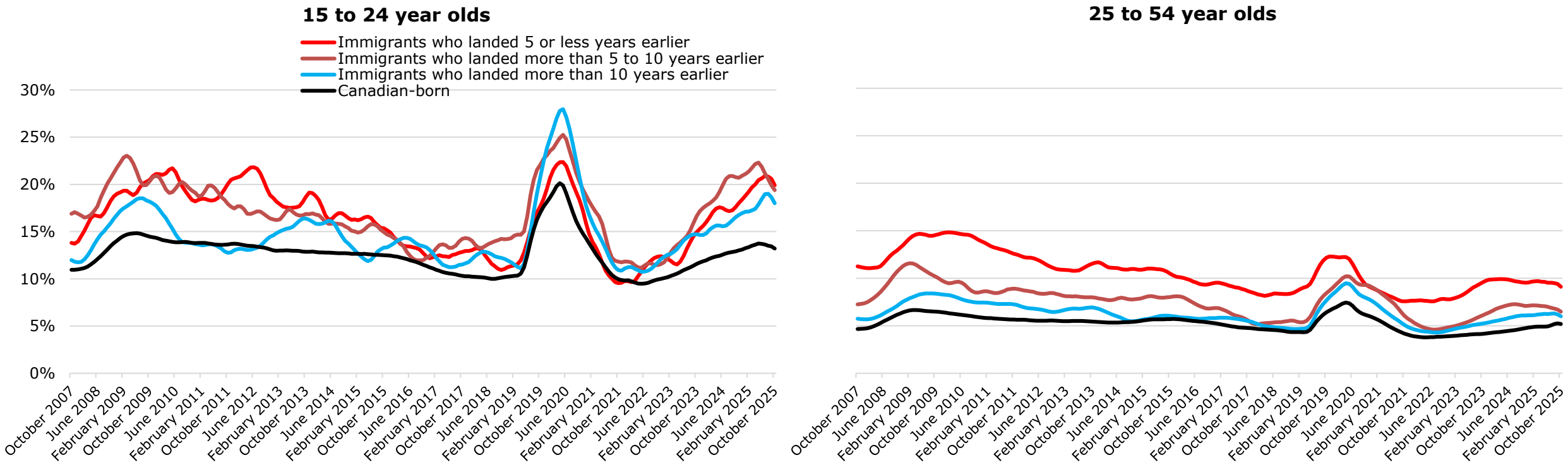
AI: A mix of uncertainty and opportunity

- Artificial intelligence (AI) holds the potential to transform the nature of work but recent advances are raising concerns about the scale of disruption and the possibility of large-scale job losses.
- Previous waves of technological transformation such as automation affect jobs involving simple, routine and non-cognitive tasks.
- AI ≠ automation. A broader segment of the workforce including highly skilled workers could be impacted given AI's growing capacity to perform complex, non-routine and cognitive tasks.
- Distinguishing the impact of AI on the labour market from other factors is challenging given competing economic forces—from the aftermath of the pandemic to rapid demographic shifts driven by immigration, and recent trade tensions with the U.S.
- The transformative potential of AI and uncertainty about longer-term consequences highlight the need for continued tracking and monitoring of the labour market for informing discussions surrounding career planning and reskilling.

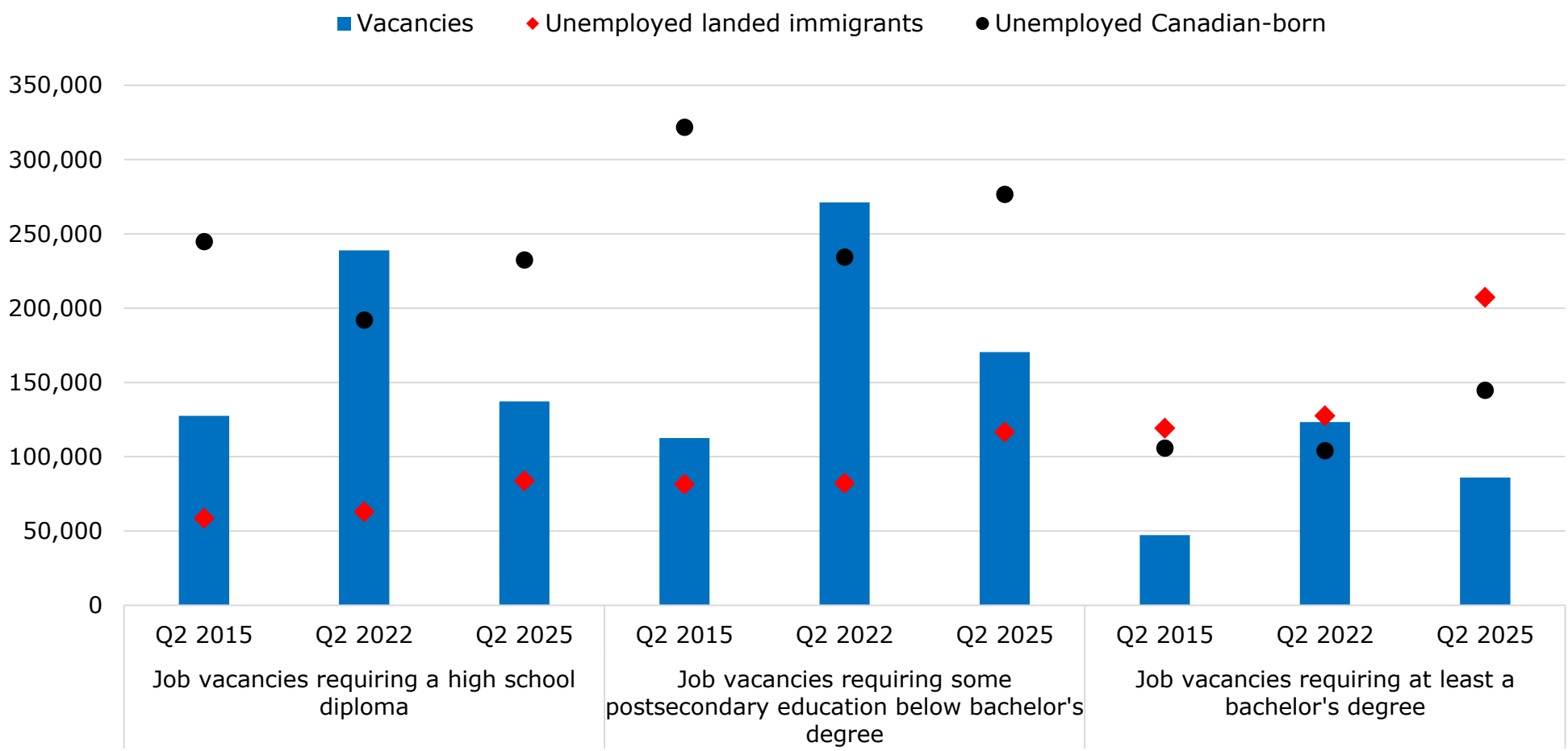
Immigrants face a particularly challenging labour market

Unemployment rates, October 2007 to October 2025



Note: The three-month moving averages were further transformed to twelve-month moving averages.
Source: Statistics Canada, table 14-10-0471-01 Labour force characteristics of immigrants, three-month moving average, unadjusted for seasonality.

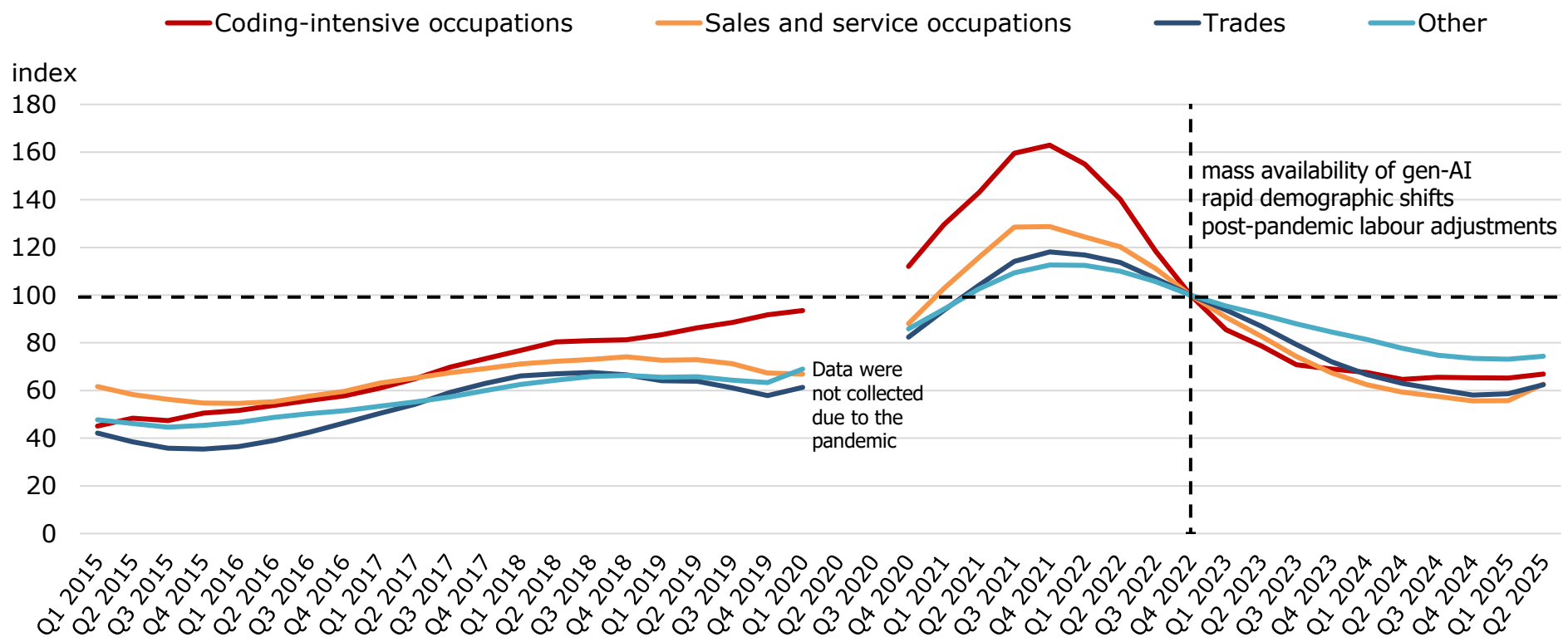
Job vacancies and unemployed people



Note: Excludes the territories.
Source: Statistics Canada, table 14-10-0443-01 and 14-10-0086-01.

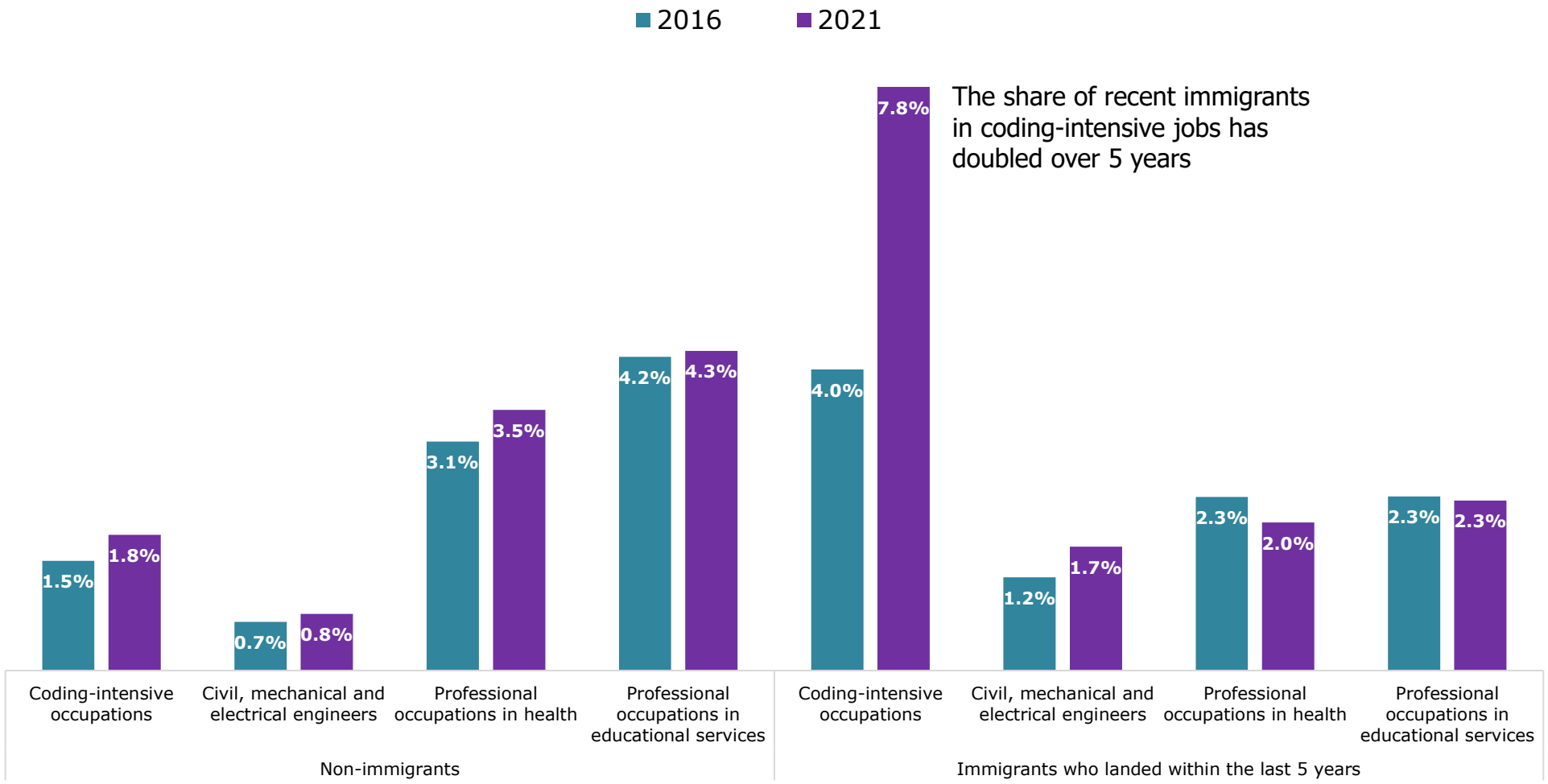
Job vacancies are returning to their pre-pandemic levels

Relative change in the number of job vacancies (Q4 2022 = 100)



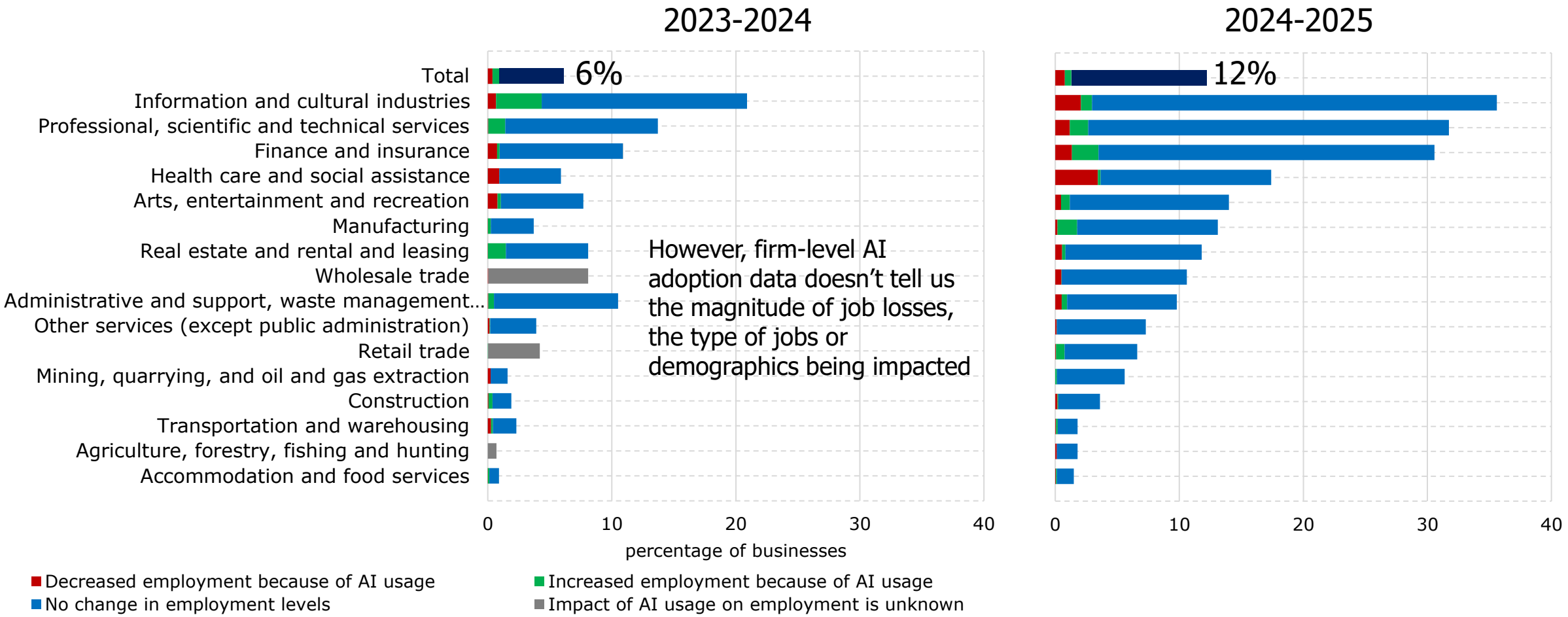
Note: Moving average over 4 quarters.
Source: Statistics Canada, table 14-10-0443-01 Job vacancies, proportion of job vacancies and average offered hourly wage by occupation and selected characteristics, quarterly, unadjusted for seasonality.

Recent immigrants increasingly more likely to go into coding-intensive occupations



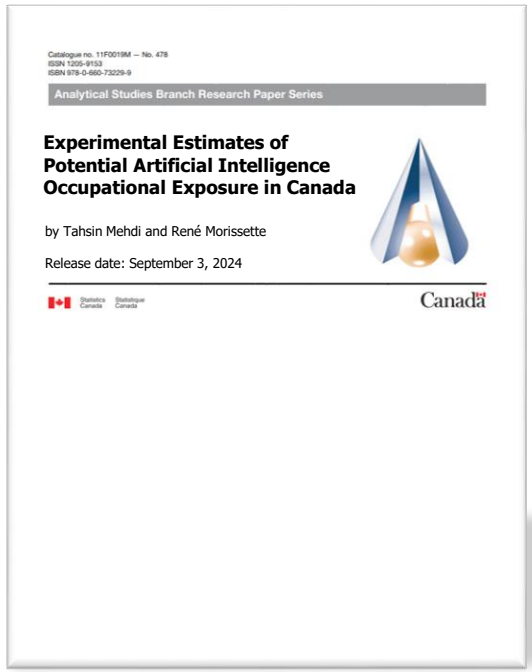
Sources: Statistics Canada, Censuses of Population, 2016 and 2021.

AI adoption rate doubled over the past two years among Canadian businesses



Notes: The following industries were excluded: utilities [22]; all other financial investment activities [523990]; management of companies and enterprises [55]; educational services [61]; out-patient care centres [6214]; medical and diagnostic laboratories [6215]; other ambulatory health care services [6219]; hospitals [622]; community food and housing, and emergency and other relief services [6242]; private households [814]; and public administration [91].
Sources: Statistics Canada. Table 33-10-0825-01, 33-10-1004-01, 33-10-0826-01, and 33-10-1006-01.

Experimental estimates of potential AI occupational exposure in Canada

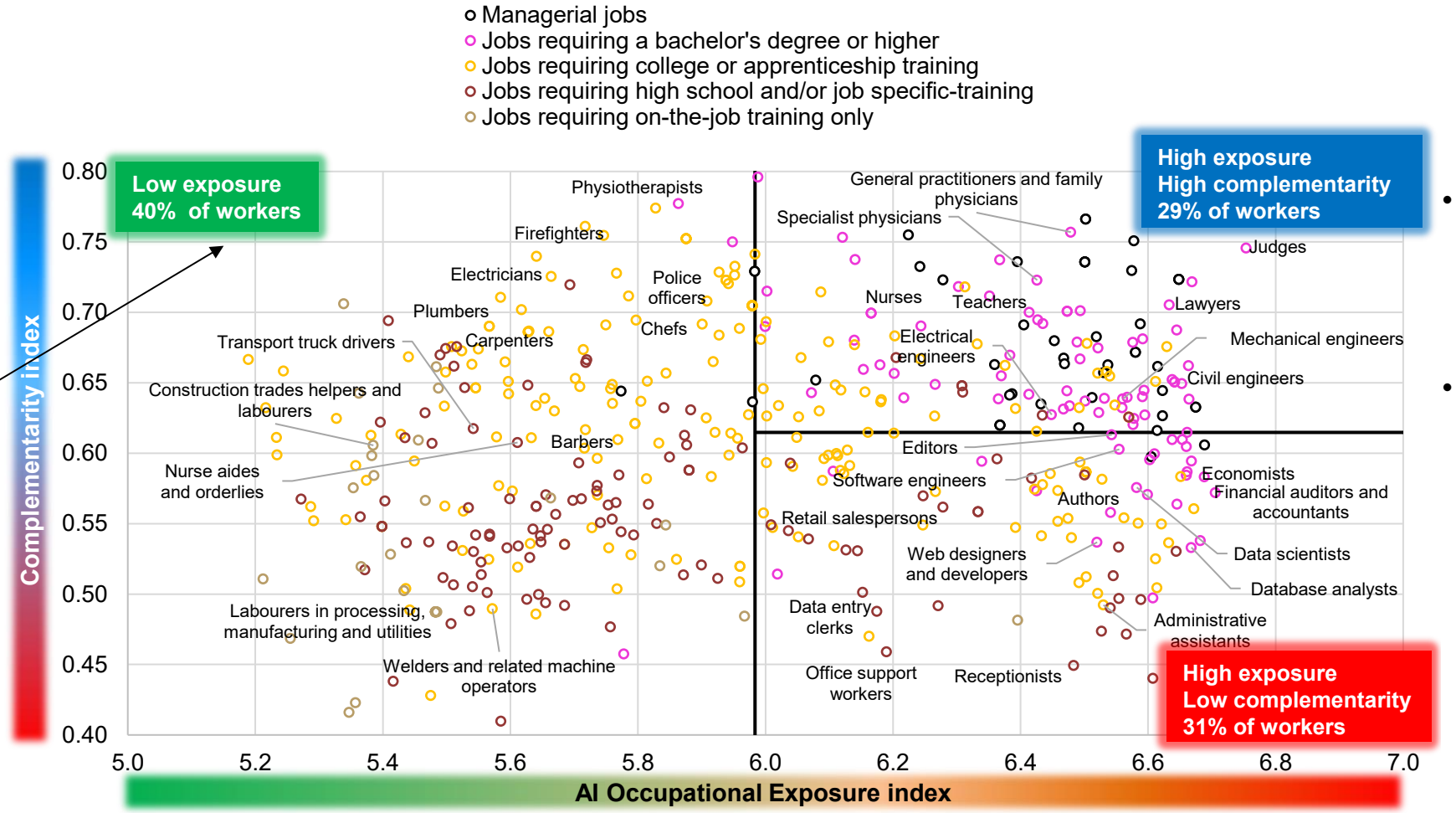


doi.org/10.25318/11f0019m2024005-eng

doi.org/10.25318/36280001202400900004-eng

These studies analyzed the potential distributional impact of AI on Canadian workers using the Complementarity-Adjusted AI Occupational Exposure (C-AIOE) index which measures potential occupational exposure to AI as well as the degree to which AI could replace workers.

Potential AI occupational exposure and complementarity

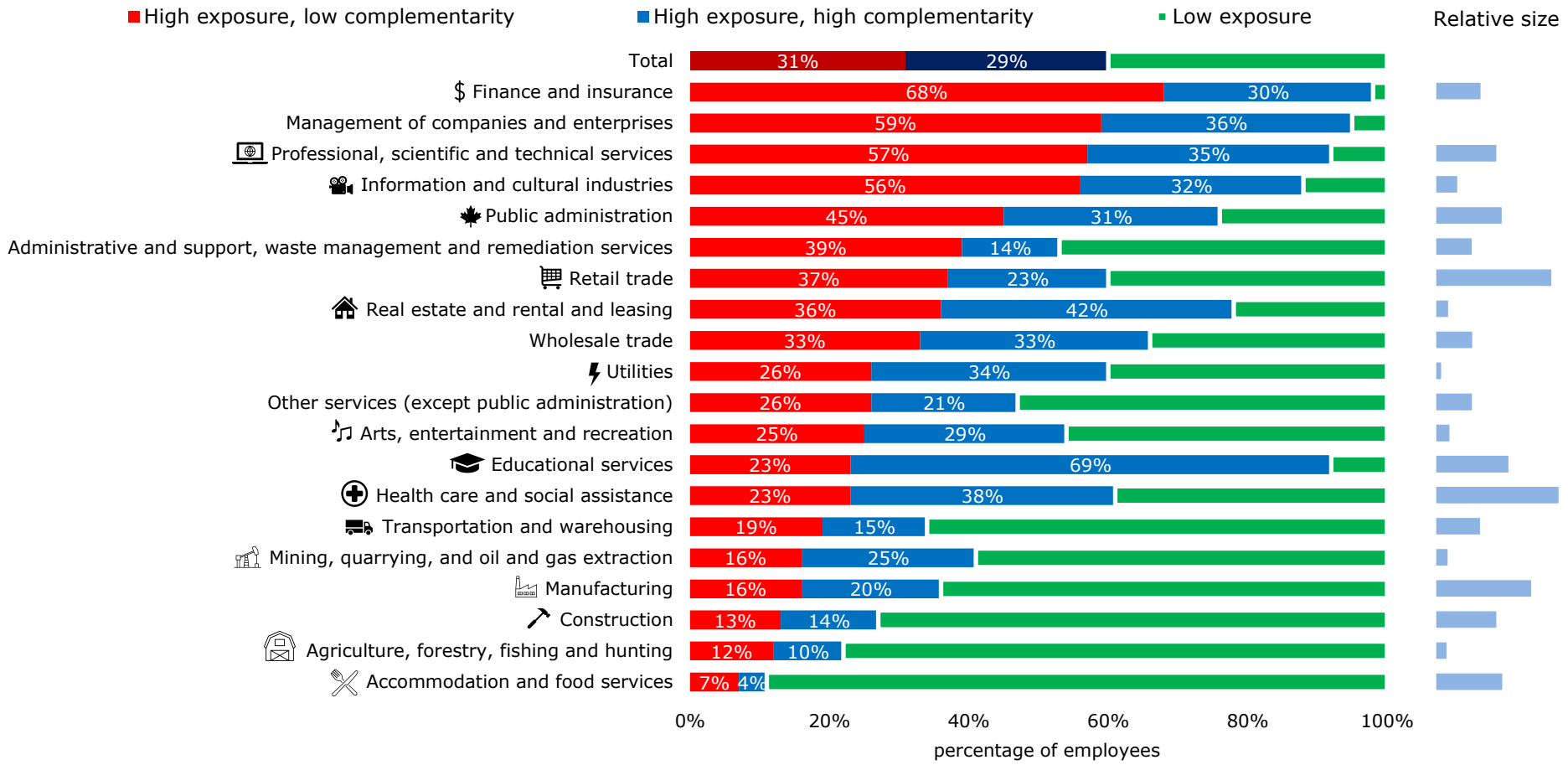


Although potentially less exposed to AI, these jobs face a potentially higher risk of **automation**

- Exposure and complementarity are relative measures and **not absolute**.
- Relatively higher exposure to AI **does not** necessarily imply a higher risk of job loss but rather at the very least, it could imply some degree of **job transformation**.

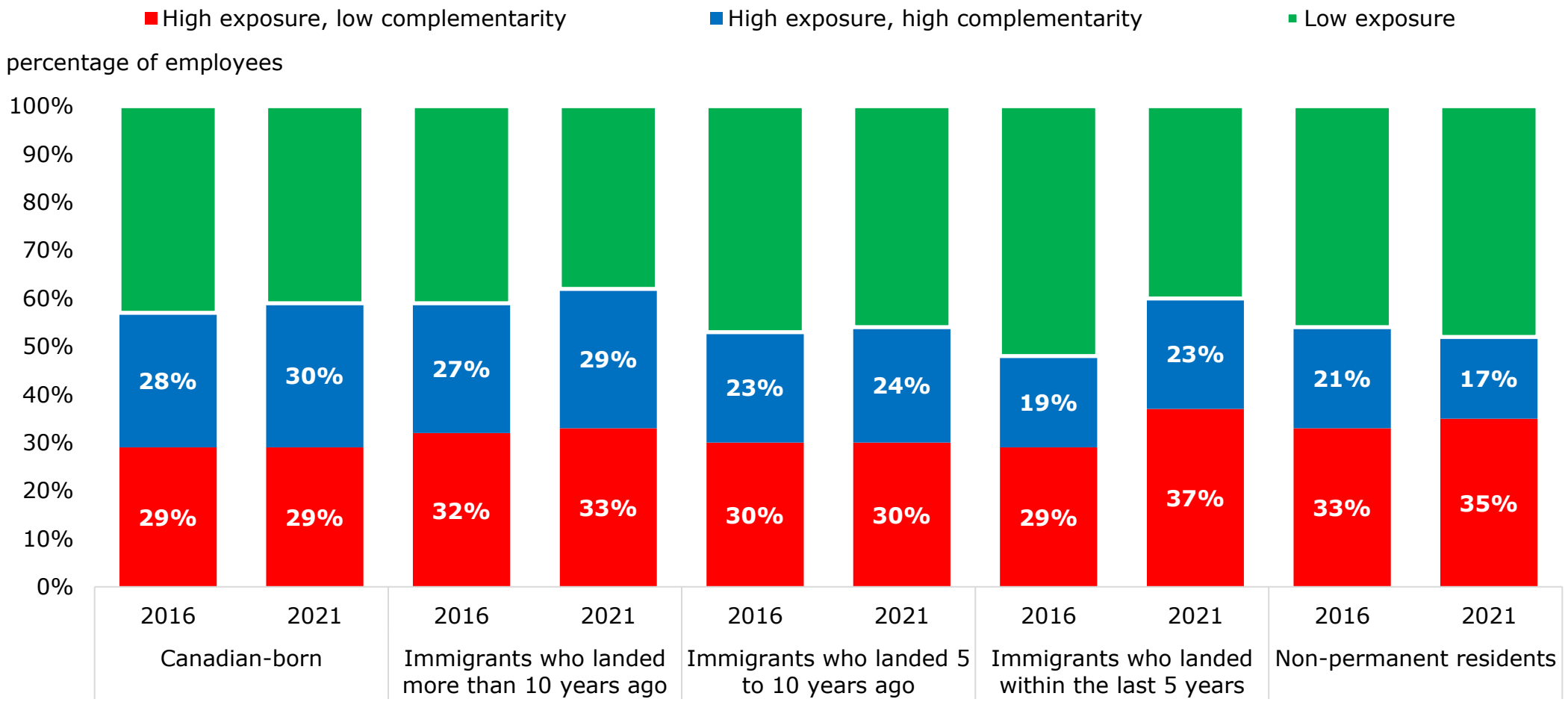
Notes: The AIOE index and potential complementarity are based on Felten, Raj and Seamans (2021) and Pizzinelli et al. (2023). An occupation is considered high exposure if its AIOE index exceeds the median AIOE across all occupations and considered low-exposure otherwise. Similarly, an occupation is considered high complementarity if its complementarity index exceeds the median complementarity across all occupations and considered low complementarity otherwise. Occupations in this chart are based on the 4-digit National Occupational Classification (NOC) 2016 version 1.3 converted from the United States Standard Occupational Classification 2018.
Source: Occupational Information Network.

Substantial variation in potential AI exposure across industries



Notes: The sample consists of employees aged 18 to 64 living off reserve in private dwellings, excluding full-time members of the Canadian Armed Forces. The industry classifications are based on the North American Industry Classification System 2017. The industries are ranked according to the number of employees from most (top) to least (bottom). The artificial intelligence occupational exposure index and potential complementarity are based on Felten, Raj and Seamans (2021) and Pizzinelli et al. (2023).
Source: Mehdi and Morissette (2024), doi.org/10.25318/11f0019m2024005-eng

Recent immigrants hold jobs potentially more exposed to and less complementary with AI



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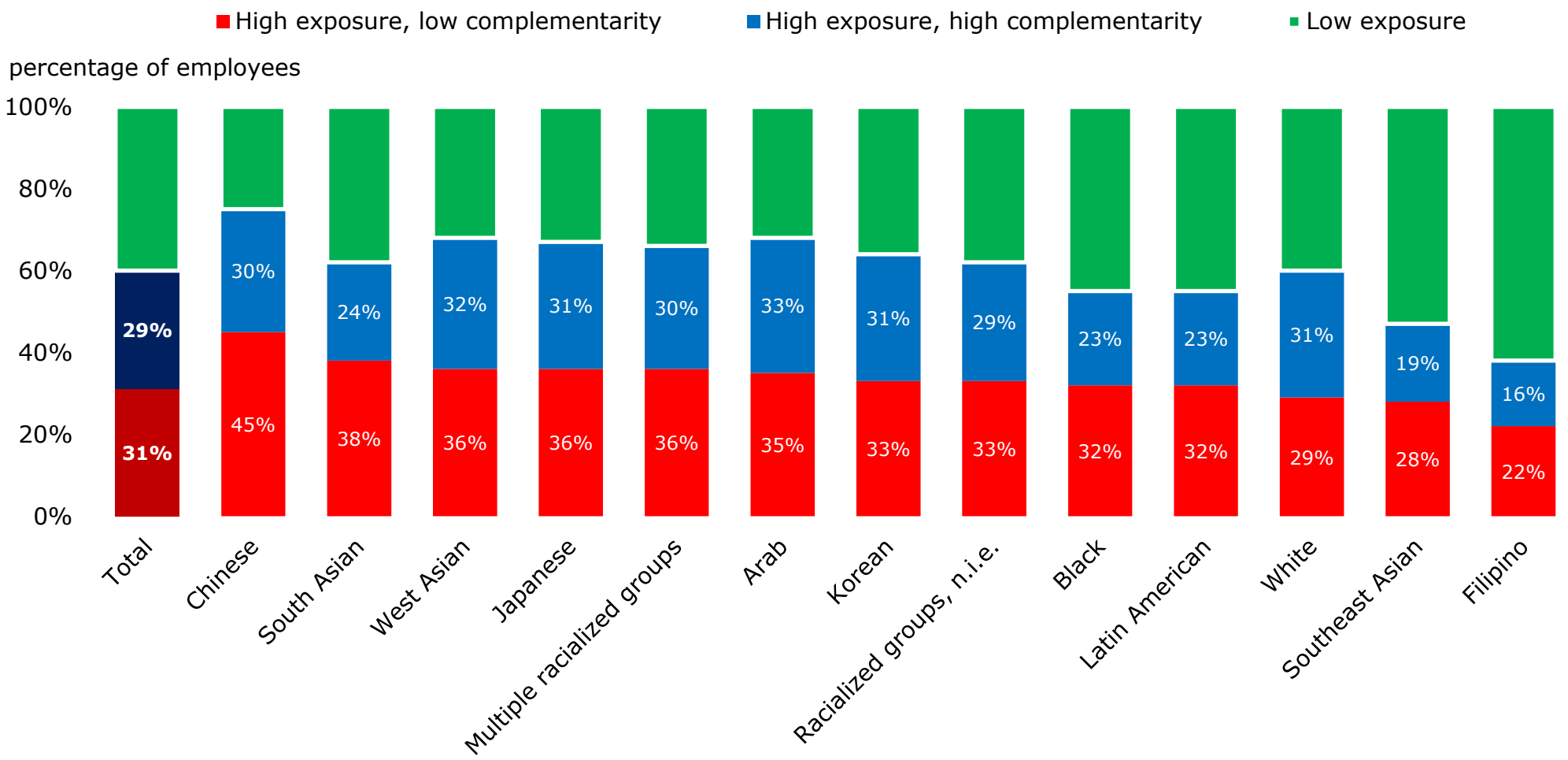
Substantial variation in potential AI exposure across racialized groups



n.i.e. : not included elsewhere

Notes: The sample consists of employees aged 18 to 64 living off reserve in private dwellings, excluding full-time members of the Canadian Armed Forces. The artificial intelligence occupational exposure index and potential complementarity are based on Felten, Raj and Seamans (2021) and Pizzinelli et al. (2023).

Source: Mehdi and Morissette (2024), doi.org/10.25318/11f0019m2024005-eng

Summary

- Considerable uncertainty surrounding the power of AI and the breadth of its potential.
- Experts can offer theoretical assessments of the kind of tasks which could be performed by AI, but just because a job **can** be done by AI does not necessarily mean that it **will** because employers may not immediately implement AI due to financial, legal, and institutional factors.
- Even if AI is not implemented by businesses on a wide scale, it could still have spillover effects on employment if AI adopters increase their labour productivity and capture a greater market share forcing other firms to exit (and hence indirectly displace workers).
- Potential impact of AI on self-employment / digital freelancers?
- Impact of AI beyond the labour market: skill erosion, lowering barriers for entry into certain professions, etc.

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