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Abstract

Artificial intelligence (AI) holds the potential to transform the nature of work, and its ability to replace human labour remains a central concern. This study highlights recent labour market trends, distinguishing jobs potentially more exposed to and less complementary with AI from other jobs. From November 2022—when generative AI applications started gaining traction following the mass availability of ChatGPT—to December 2025, employment generally grew regardless of potential occupational exposure to and complementarity with AI. However, job growth varied across worker characteristics. Younger employees and those less educated generally saw weaker job growth over this period. Coding-intensive professions (e.g., software engineers and web designers) grew at a similar rate as other jobs. However, gains in coding-intensive jobs were concentrated among workers aged 30 to 49, while the number of coding professionals younger than 30 stagnated. From the fourth quarter of 2022 to the third quarter of 2025, job vacancies in occupations potentially more exposed to and less complementary with AI decreased at a similar rate as vacancies in occupations potentially less exposed to AI. Jobs potentially more exposed to AI regardless of complementarity are more likely to be higher-paying, associated with workplace pension plans, full-time and permanent. Thus, AI-driven layoffs could potentially involve the loss of high-quality jobs. Some of the results reflect longer-term trends predating the widespread availability of AI. It is unclear whether more recent trends reflect the advent of AI, other economic factors such as labour market adjustments after the COVID-19 pandemic, rapid demographic shifts, recent trade tensions with the United States or a combination of factors that are shaping the Canadian economic landscape.

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Introduction

Artificial intelligence (AI)—particularly generative AI—has emerged as a new and potentially transformative force restructuring the labour market.[1] As these tools become more integrated into different parts of the economy, questions are arising about their potential impact on employment, job quality and the nature of work itself. The Canadian labour market has gone through substantial changes over the past few years because of a range of factors, including the COVID-19 pandemic, population growth driven by immigration and trade tensions with the United States beginning in early 2025. Therefore, isolating the impact of AI from other economic factors is challenging. Nonetheless, tracking and monitoring labour market trends against the backdrop of technological progress are important for policy makers, employers and workers alike as Canada and the rest of the world navigate the potential challenges and opportunities that may lie ahead.

Ever since the seminal work of Frey and Osborne (2013), a growing body of literature on the potential impact of technological transformation on the labour market has emerged (e.g., Oschinski and Wyonch, 2017; Nedelkoska and Quintini, 2018; Frenette and Frank, 2020; Felten et al., 2021; Pizzinelli et al., 2023; Mehdi and Morissette, 2024; Eloundou et al., 2024; Kochhar, 2024; and Gmyrek et al., 2025). Unlike previous waves of technological transformation, such as automation, which primarily affects workers who perform simple and repetitive tasks, AI holds the potential to transform the jobs of workers who perform complex and cognitive tasks.

The percentage of Canadian businesses that reported using AI to produce goods or deliver services doubled from 6% during the 2023-to-2024 period to 12% during the 2024-to-2025 period (Bryan et al., 2024; Bryan et al., 2025; Statistics Canada, 2024a, 2024b, 2025a, 2025b). However, the deployment of AI does not necessarily translate to job loss. Indeed, the percentage of AI-adopting businesses that reported reducing employment because of AI remained steady at about 6% over both periods. But the number and characteristics of workers displaced by AI are unknown. Moreover, these statistics capture **direct** firm-level employment changes and do not consider the potential indirect effects of AI adoption on other businesses or industries. While this study makes no attempt to quantify AI-driven job losses (direct or indirect), it highlights recent employment trends distinguishing occupations **potentially** more exposed to and less complementary with AI from other occupations.

AI technologies are rapidly evolving, but their net economic impact remains ambiguous. While AI is capable of potentially replacing a wide range of tasks, such as writing, coding, translating and generating images, it can also augment jobs and have a complementary effect for some workers.[2] Mehdi and Morissette (2024) and Mehdi and Frenette (2024) estimated that 60% of the Canadian workforce was potentially highly exposed to AI-related job transformation, but AI may be able to augment the jobs of about half of these workers, rather than replace them. Li and Dobbs (2025) applied the same methodology used by Mehdi and Morissette (2024) and Mehdi and Frenette (2024) to online job posting data—they found no clear evidence of AI-driven skills polarization on the labour demand side. Oschinski and Walia (2025) used a large language model-driven approach and found that AI may be more likely to transform the nature of work itself rather than substitute for human labour. To date, no work in Canada has tracked the state of jobs that could potentially be more exposed to AI-related job transformation.

1. The *Directive on Automated Decision-Making* defines AI as information technology that performs tasks that would ordinarily require biological brainpower to accomplish, such as making sense of spoken language, learning behaviours or solving problems. Generative AI—which is the focus of this study—is a type of AI that produces content such as text, audio, code, videos and images (Government of Canada, 2025). This study does not consider the potential of more advanced forms of AI, such as artificial general intelligence, which may be able to think and act autonomously in the future.
2. For instance, much like how autopilots in airplanes serve as valuable tools that assist human pilots but do not eliminate the need for their expertise and oversight, AI can function as an augmentative technology, enhancing human capabilities rather than fully substituting for them.

Some American studies show that recent employment trends for occupations potentially more exposed to AI-related job transformation are not all that different from those for other occupations (e.g., Eckhardt and Goldschlag, 2025; Gimbel et al., 2025; Hampole et al., 2025; and Humlum and Vestergaard, 2025). Other studies found some correlation between the rise of generative AI and weaker employment growth for younger software developers since the release of ChatGPT in November 2022 (e.g., Brynjolfsson et al., 2025; and Chandar, 2025).

However, it is unclear whether such trends can be attributed to AI alone. Job vacancies surged in late 2021 and continued to increase into 2022 as the economy was recovering from the pandemic, but this unmet demand for skills subsequently subsided (Statistics Canada, 2025c). Thus, it is difficult to ascertain whether any recent employment declines are a result of AI, some post-pandemic labour market adjustment process or a combination of factors beyond these. That said, the adoption and diffusion of new technologies typically unfold gradually, and it may be too early to detect large-scale effects of AI on the labour market. A few years of post-ChatGPT data points should therefore be interpreted with caution, as they may not be indicative of longer-term trends, especially given the concurrent influence of other economic shocks resulting from rapid demographic changes because of increased immigration and recent trade tensions with the United States.

The estimates presented in this study are largely based on the technological feasibility of replacing job tasks. Employers may not immediately replace human labour with AI, even if it is technologically feasible to do so, because of financial, legal and institutional constraints. Consequently, exposure to AI does not necessarily imply a risk of job loss. At the very least, it could imply a certain degree of job transformation.

Data and methods

This study pulls together data from the monthly Labour Force Survey (LFS) to examine employment and the quarterly Job Vacancy and Wage Survey (JVWS) to examine unmet skills demand. The LFS sample is restricted to employees (i.e., paid workers) aged 15 and older.[3] Both the LFS and the JVWS samples are restricted to the 10 provinces. This study examines labour market trends, leveraging over a decade of data from the LFS (January 2015 to December 2025) and the JVWS (the first quarter of 2015 to the third quarter of 2025).[4]

There is no straightforward way to measure technology-driven job losses. As a result, analysts often rely on expert assessments to classify occupations by their degree of potential exposure to technological transformation. By comparing employment trends across these exposure gradients, analysts can gain insight into how the deployment of new technologies, such as AI, may be affecting different segments of the labour market, even without explicit data on technology-driven job displacement.

Following U.S. studies such as those of Brynjolfsson et al. (2025) and Gimbel et al. (2025), this study examines labour market trends relative to November 2022, when generative AI tools started gaining traction following the mass availability of ChatGPT. While November 2022 marks an important milestone

3. The LFS target population includes all people aged 15 and older whose usual place of residence is in Canada, including non-permanent residents, permanent residents (landed immigrants) and the Canadian-born population. People living on reserves, full-time members of the regular Canadian Armed Forces, people living in institutions and people living in very remote areas are excluded from the survey target population. The LFS target population includes all provinces and territories; however, the LFS uses a different methodology for the territories. The territories are not included in this analysis. Self-employed people are excluded from this analysis, because they are distinct from paid workers and warrant a separate analysis.
4. Estimates in this study are based on LFS microdata custom tabulations, which were subsequently seasonally adjusted using X-13ARIMA-SEATS.

for the widespread availability of generative AI, it is important to recognize that occupational shifts may have already been underway, because earlier advances in machine learning and related technologies likely began reshaping work processes and job requirements well before this date. In Canada specifically, technological developments in generative AI beginning in 2022 also coincided with rapid demographic changes driven largely by increased immigration—especially the substantial rise in the number of international students entering the labour market. Thus, observed changes in the labour market since November 2022 may reflect the cumulative effects of recent generative AI developments, the broader ongoing influence of previous AI technologies and rapid demographic changes.

Two different methods that have been used to group occupations based on potential exposure to AI include (1) the complementarity-adjusted AI occupational exposure (C-AIOE) index developed by Felten et al. (2021) and the International Monetary Fund (Pizzinelli et al., 2023), and (2) the isolation of coding-intensive jobs.[5]

The C-AIOE index is the main method used in this study. This measure was also used by Mehdi and Morissette (2024), Mehdi and Frenette (2024), and Li and Dobbs (2025) among others. The C-AIOE index measures the degree to which a given occupation may be exposed to AI and the extent to which it could be complementary with AI.

Quantifying potential exposure relies on expert assessments of AI's capacity to mimic a variety of human occupational abilities, such as writing, reasoning, memorizing and physical strength, and the integration of these assessments with data on the prevalence and importance of these abilities across thousands of jobs measured by the Occupational Information Network (O*NET).[6]

Quantifying potential complementarity requires work context and skills data from O*NET. Potential complementarity with AI depends on the extent to which a job's tasks and work context can benefit from AI as a supportive tool, rather than being directly substituted by it. For example, occupations that require advanced communication, public speaking or nuanced face-to-face interactions often rely on human strengths that are not easily replicated by AI, making these roles more likely to be augmented—rather than replaced—by new technologies. Similar patterns hold in jobs where responsibility for outcomes, especially those relating to others' health or safety, remains crucial; here, human oversight, judgment and accountability still play an essential role even as AI systems assist with analysis or routine processes. Additionally, occupations that necessitate working in complex physical environments or close proximity to others and those where the consequences of errors are significant tend to require human adaptability and real-time decision making, limiting the extent to which AI can fully substitute for human workers. Finally, jobs that are less routine or demand considerable preparation and specialized skills are more likely to harness AI as a tool for augmentation, since integrating and leveraging AI often require a high degree of expertise and adaptability. Thus, the potential for AI to complement, rather than replace, workers varies according to the work context, task structure and skill requirements across occupations. See Felten et al. (2021) and Pizzinelli et al. (2023) for full details on the computation of the C-AIOE measure.

The C-AIOE index can group jobs into three distinct categories based on whether the potential occupational exposure and complementarity scores fall above or below the median score across all occupations: (1) high exposure and low complementarity (HELC), (2) high exposure and high

5. Occupational exposure to AI can be thought of as the potential for AI applications to substitute for, complement or transform tasks within a given occupation. For the purposes of this study, coding-intensive jobs refer to the following 2021 National Occupational Classification occupations: data scientists, cybersecurity specialists, business systems specialists, information systems specialists, database analysts and data administrators, computer systems developers and programmers, software engineers and designers, software developers and programmers, web designers, and web developers and programmers. These jobs represent a subset of the high-exposure and low-complementarity jobs defined by the C-AIOE index.
6. https://www.onetonline.org.

complementarity (HEHC), and (3) low exposure (LE). Thus, these potential occupational exposure and complementarity rankings are relative and not absolute. That is, a job is only more or less potentially exposed to or complementary with AI relative to the median occupational score.

HELC jobs—which comprise a mix of skill levels ranging from retail salespeople, data entry clerks and other office support workers to software engineers, economists, accountants and financial auditors—involve tasks that may be more susceptible to replacement by AI. There is considerable uncertainly, however, regarding the extent to which AI can actually replace human labour. For example, although thought to be highly exposed to and less complementary with AI, software engineers and adjacent jobs are integral to maintaining and improving future AI infrastructure. HEHC jobs—which comprise professions such as doctors, nurses, teachers and engineers—are characterized by advanced training requirements and tasks that AI may be more likely to augment rather than substitute for human labour.[7] LE jobs—which comprise a wide range of occupations from the skilled trades, cashiers, bartenders and chefs to first responders—are potentially the least exposed to AI, but they may face a relatively higher risk of automation-related job transformation.[8] Thus, it is important to recognize that recent labour market trends may not always show stark differences in outcomes between HELC and LE jobs, given that both groups may be vulnerable to technological transformation, whether through AI or automation. Moreover, shifts in employment may reflect not only the displacement of jobs, but also the expansion or creation of occupations. Ultimately, the impact of emerging technologies on different occupational groups is complex and multifaceted, with the potential for job loss and job creation depending on the specific context. This suggests that the effects of technological transformation on job displacement may not be uniform or solely confined to the most **exposed** occupations.

The methods used in this study rely on expert assessments of AI's current capacity to perform occupational tasks. The applicability of these measures may therefore decrease over time as AI technologies improve. Moreover, the measures capture only the **direct** potential impact of AI. They do not capture spillover effects such as the creation of new jobs, as was the case with previous technological innovations (e.g., the invention of the personal computer led to job losses but also job creation). It is important to note that, as with any measure of technological transformation—whether related to AI or earlier waves of automation—expert assessments retain an element of subjectivity. Nevertheless, they provide valuable and systematic insight into how different occupations may interact with emerging technologies.

Employment generally grew regardless of potential occupational exposure to and complementarity with artificial intelligence from November 2022 to December 2025

Regardless of potential occupational exposure to and the degree of complementarity with AI, employment generally grew at similar rates from November 2022 to December 2025 (Chart 1). There is no clear evidence of any persistent decline in HELC jobs for men or women over this period. Employment for men in HELC jobs was about 10% higher in December 2025 than in November 2022. For women, it was around 5% higher. These growth rates were not significantly different from those observed for HEHC and LE jobs, and neither were the gender differences across the respective C-AIOE groups. In the longer

7. For example, a doctor could have an AI assistant take notes while a patient describes their symptoms, allowing for more face-to-face discussion between that doctor and the patient.
8. See Figure 1 from Mehdi and Morissette (2024) for a visual representation of how Canadian occupations map onto the C-AIOE index.

term, however, employment growth in HELC and HEHC jobs outpaced growth in LE jobs over the last decade for both men and women.[9]

Employment growth was relatively weak for younger employees and less educated employees from November 2022 to December 2025 regardless of potential occupational exposure to and complementarity with artificial intelligence

Although the immediate impact of generative AI on aggregate employment may not yet be detectable on a large scale, there are growing concerns that it may be displacing certain groups of workers, such as those in entry-level positions. Chart 2 illustrates this issue by comparing employment growth among employees aged 15 to 29 and employees aged 30 to 49 across the three C-AIOE groups.[10] Comparing employment growth across age groups can be challenging given the rapid demographic shifts observed in Canada in recent years caused by increased immigration beginning in 2022—especially the substantial rise in the number of international students entering the labour market. However, from 2022 to 2025, the annual population growth rates of 15- to 29-year-olds (9%) and 30- to 49-year-olds (11%) were similar, helping to ensure that the observed comparisons in employment growth between these age groups were not confounded by uneven population changes (Statistics Canada, 2025d). Panel (a) shows that employment among employees aged 15 to 29 in December 2025 was roughly 5% higher than in November 2022. Moreover, the differences between HELC job growth and HEHC and LE job growth from November 2022 to December 2025 were not statistically significant (albeit less than a fifth of employees aged 15 to 29 were in HEHC jobs). Employment growth for younger employees across the C-AIOE groups was generally stagnant compared with their older counterparts, who saw more robust growth. Employment for those aged 30 to 49 steadily grew across all three C-AIOE groups during this period. By December 2025, employment among employees aged 30 to 49 was 10% higher than in November 2022. As was the case for younger employees, the differences in growth rates across the three C-AIOE groups were not statistically significant among older employees.

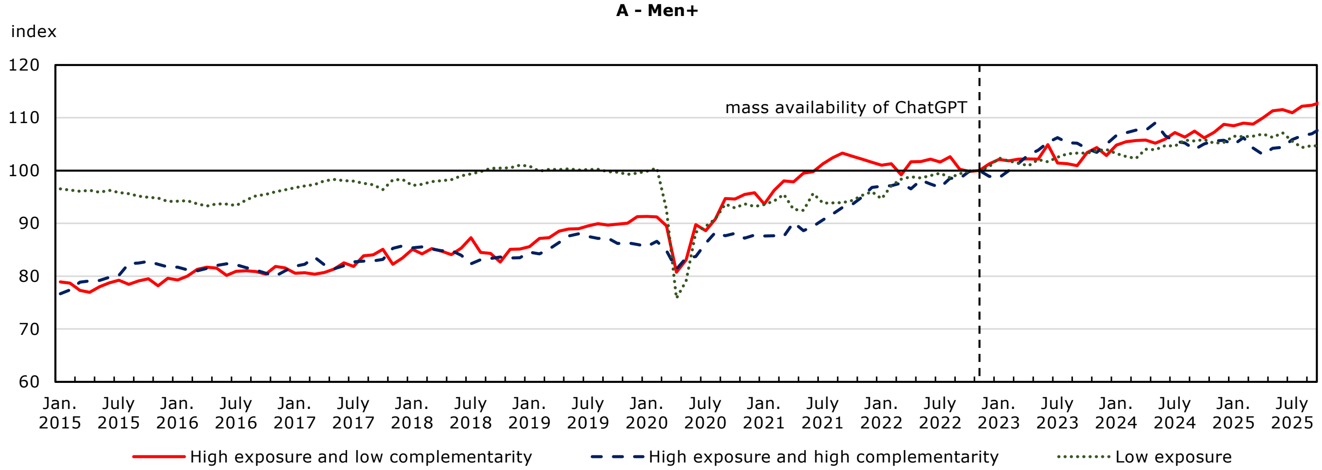
Although highly skilled workers were largely unaffected by previous waves of technological transformation, such as automation, there are growing concerns that even highly skilled jobs may be affected or transformed in some way in the era of generative AI. Employment growth trends across the three C-AIOE groups varied considerably by educational attainment (Chart 3). Employees with a bachelor’s degree or above saw the most robust growth from November 2022 to December 2025. Regardless of potential occupational exposure to and complementarity with AI, they saw job gains of 10% to 20% over this period.[11] Employees whose highest level of education was a trades certificate or diploma saw job gains of 10% in LE jobs and 20% in HEHC jobs but no growth in HELC jobs. The lack of growth in HELC jobs is not surprising given that the skilled trades are largely concentrated in the LE

9. The pandemic triggered an increase in the rate of telework—a mode of work that many workers prefer because of the flexibility it offers (Mehdi and Morissette, 2021). There may be a perception that if a job can be performed from home, then it may be a candidate for AI replacement. Over two-thirds of HEHC and HELC jobs can, in principle, be performed from home using the methodology of Dingel and Neiman (2020) to classify jobs according to their telework potential. However, from November 2022 to December 2025, teleworkable jobs grew at a similar rate as other jobs. The actual share of teleworkers decreased over this period, but this was primarily because of employers mandating return-to-office policies and not necessarily AI replacing teleworkable jobs.
10. A younger age group (i.e., employees ages 15 to 24) was also considered, but further disaggregation by the three C-AIOE groups resulted in a high degree of sampling variability.
11. About 15% of employees with a bachelor’s degree or above worked in LE jobs, compared with 41% of employees with a postsecondary credential below a bachelor’s degree or some postsecondary education (incomplete), 67% of employees with a trades certificate or diploma, and 64% of employees with a high school diploma or below.

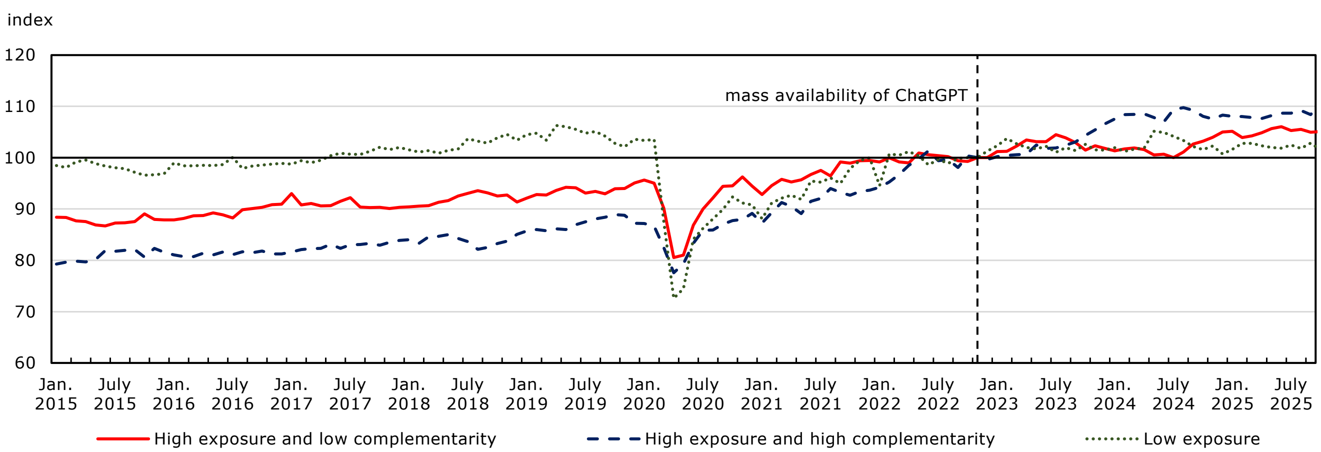
group. By contrast, there was little to no employment growth regardless of potential occupational exposure to and complementarity with AI for employees with a high school diploma or below or with a postsecondary credential below a bachelor's degree or some postsecondary education (incomplete). The differences in growth rates across HEHC, HELC and LE jobs within the educational attainment categories were not statistically significant. Some of the divergent employment growth trends across education levels can be explained by occupational composition differences. For example, less educated employees were more likely to be employed in retail services, data entry and other clerical occupations. Data entry and clerical occupations have generally decreased over time. Highly educated employees were more likely to be employed in digital technology-related occupations, which represented a growing share of occupations.

Chart 1
Employment growth by potential artificial intelligence occupational exposure and complementarity by gender (November 2022 = 100, seasonally adjusted), January 2015 to December 2025

A - Men+



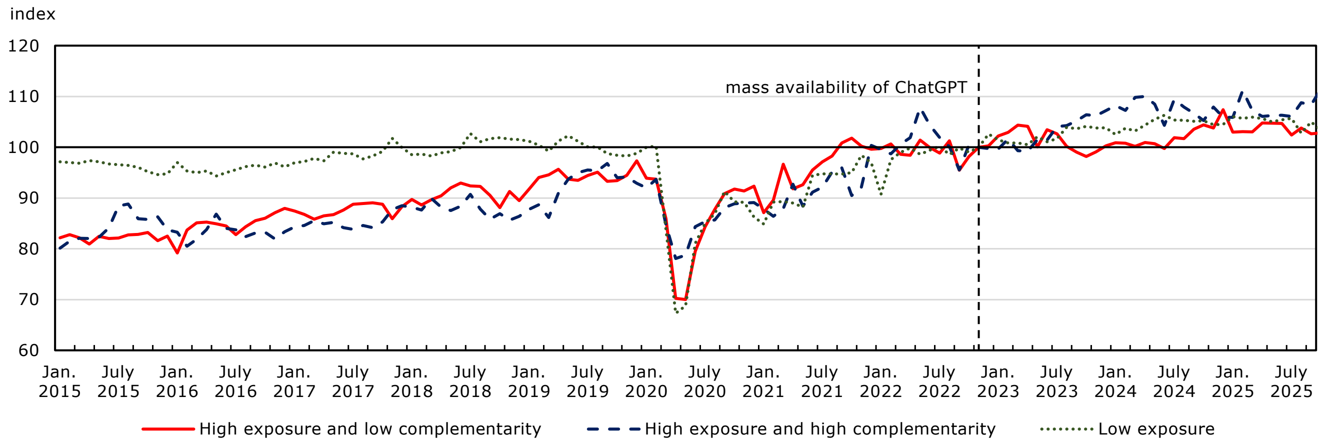
B - Women+



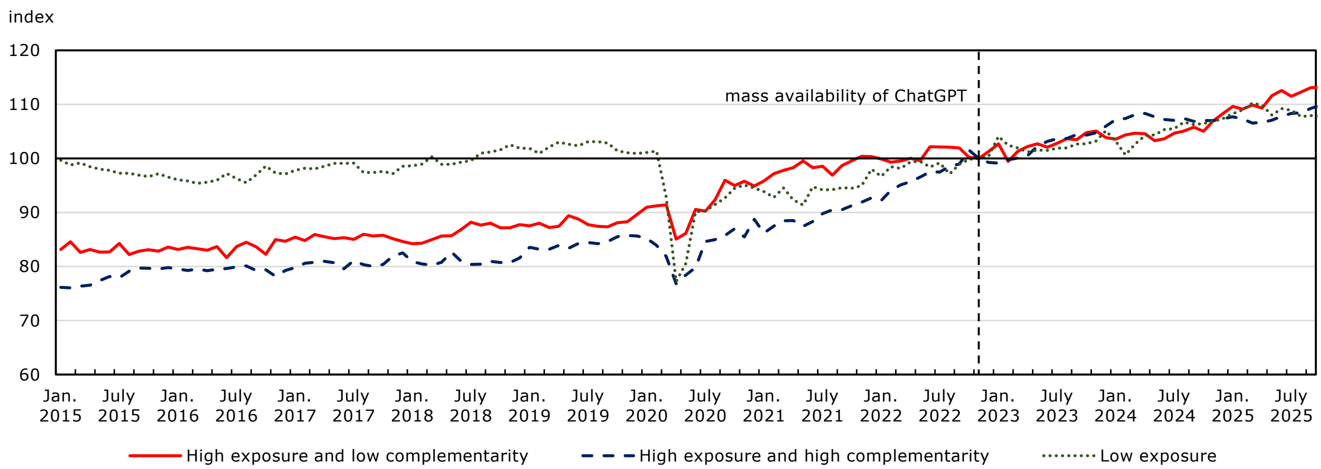
Notes: The dashed vertical line demarcates the beginning of mass availability of ChatGPT in November 2022. The solid horizontal line demarcates the baseline of the employment growth index. Any point above the line indicates a higher employment level relative to the one observed in November 2022 and any point below the line indicates a lower employment level. Employment refers to the main job of employees aged 15 and older. Given that the non-binary population is small, data aggregation to a two-category gender variable is necessary to protect the confidentiality of responses. Individuals in the category "non-binary people" are distributed into the other two gender categories and are denoted by the "+" symbol in published tables and microdata. The category "men+" includes men, boys and some non-binary people, while the category "women+" includes women, girls and some non-binary people. For ease of communication, the text simply refers to men and women. Employment growth is expressed relative to the level observed in November 2022. For example, an index of 110 would indicate 10% growth (110 minus 100) in employment relative to the November 2022 level, and an index of 90 would indicate that employment was 10% lower (90 minus 100) relative to the November 2022 level. Employment was disaggregated based on the complementarity-adjusted artificial intelligence occupational exposure (C-AIOE) index developed by Felten et al. (2021) and Pizzinelli et al. (2023). An occupation has potentially high exposure if its AIOE index exceeds the median AIOE across all occupations; otherwise, it is considered to have low exposure. Similarly, an occupation is considered to have potentially high complementarity if its complementarity parameter exceeds the median complementarity across all occupations; otherwise, it is considered to have low complementarity.
Sources: Statistics Canada, Labour Force Survey, January 2015 to December 2025; and Occupational Information Network.

Chart 2
Employment growth by potential artificial intelligence occupational exposure and complementarity by age group (November 2022 = 100, seasonally adjusted), January 2015 to December 2025

A - Employees aged 15 to 29



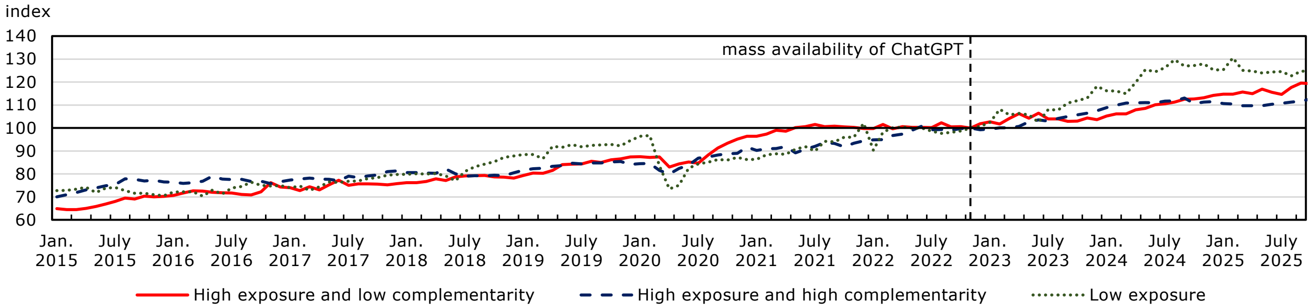
B - Employees aged 30 to 49



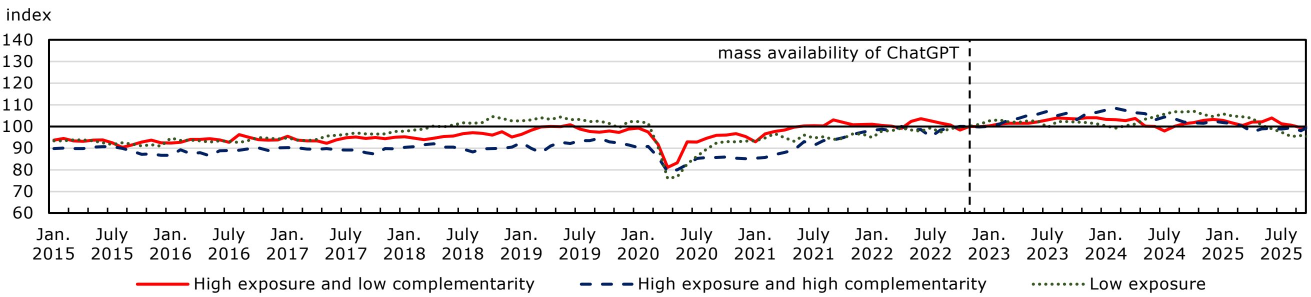
Notes: The dashed vertical line demarcates the beginning of mass availability of ChatGPT in November 2022. The solid horizontal line demarcates the baseline of the employment growth index. Any point above the line indicates a higher employment level relative to the one observed in November 2022 and any point below the line indicates a lower employment level. Employment refers to the main job of employees. Employment growth is expressed relative to the level observed in November 2022. For example, an index of 110 would indicate 10% growth (110 minus 100) in employment relative to the November 2022 level, and an index of 90 would indicate that employment was 10% lower (90 minus 100) relative to the November 2022 level. Employment was disaggregated based on the complementarity-adjusted artificial intelligence occupational exposure (C-AIOE) index developed by Felten et al. (2021) and Pizzinelli et al. (2023). An occupation has potentially high exposure if its AIOE index exceeds the median AIOE across all occupations; otherwise, it is considered to have low exposure. Similarly, an occupation is considered to have potentially high complementarity if its complementarity parameter exceeds the median complementarity across all occupations; otherwise, it is considered to have low complementarity.
Sources: Statistics Canada, Labour Force Survey, January 2015 to December 2025; and Occupational Information Network.

Chart 3
Employment growth by potential artificial intelligence occupational exposure and complementarity by highest level of education (November 2022 = 100, seasonally adjusted), January 2015 to December 2025

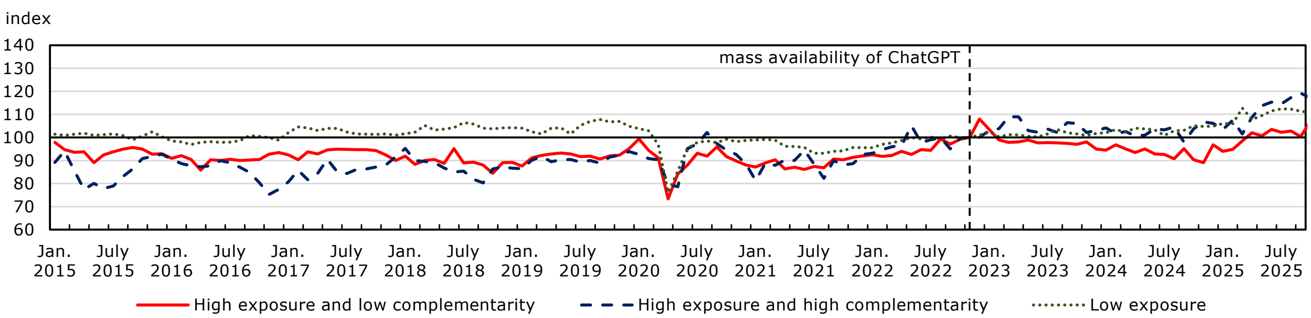
A - Employees whose highest level of education was a bachelor's degree or above



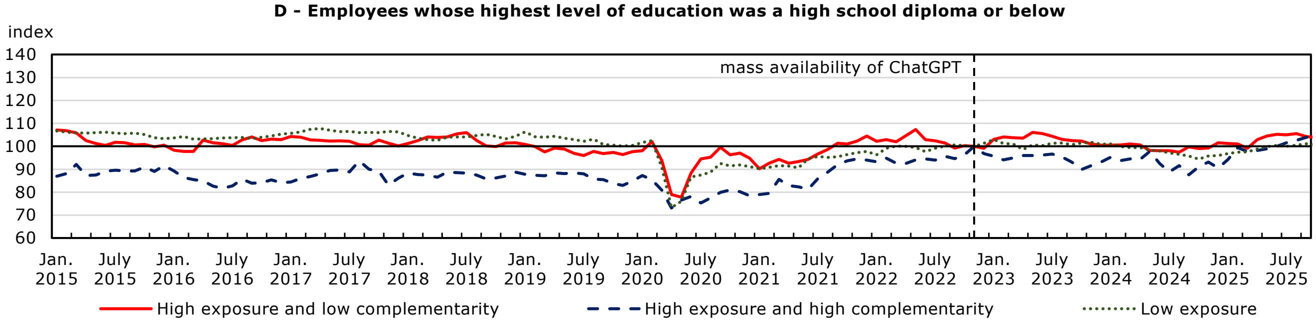
B - Employees whose highest level of education was a postsecondary credential below a bachelor's degree or some postsecondary education (incomplete)



C - Employees whose highest level of education was a trades certificate or diploma



D - Employees whose highest level of education was a high school diploma or below



Notes: The dashed vertical line demarcates the beginning of mass availability of ChatGPT. The solid horizontal line demarcates the baseline of the employment growth index. Any point above the line indicates a higher employment level relative to the one observed in November 2022 and any point below the line indicates a lower employment level. Employment refers to the main job of employees aged 15 and older. Employment growth is expressed relative to the level observed in November 2022. For example, an index of 110 would indicate 10% growth (110 minus 100) in employment relative to the November 2022 level, and an index of 90 would indicate that employment was 10% lower (90 minus 100) relative to the November 2022 level. Employment was disaggregated based on the complementarity-adjusted artificial intelligence occupational exposure (C-AIOE) index developed by Felten et al. (2021) and Pizzinelli et al. (2023). An occupation has potentially high exposure if its AIOE index exceeds the median AIOE across all occupations; otherwise it is considered to have low exposure. Similarly, an occupation is considered to have potentially high complementarity if its complementarity parameter exceeds the median complementarity across all occupations; otherwise it is considered to have low complementarity.
Sources: Statistics Canada, Labour Force Survey, January 2015 to December 2025; and Occupational Information Network.

Employment in larger establishments grew relatively faster from November 2022 to December 2025 regardless of potential occupational exposure to and complementarity with artificial intelligence

There is some evidence that larger establishments may be more likely to adopt AI than their smaller counterparts (Statistics Canada, 2025a). Chart 4 examines the relationship between potential occupational exposure to and complementarity with AI by establishment size, distinguishing between employees in establishments with 500 or fewer workers and those in establishments with more than 500 workers. Public administration, educational services, and health care and social assistance were excluded in this part of the analysis to reduce the potential influence of public sector employers which tend to be larger.

From November 2022 to December 2025, there was little to no employment growth in smaller establishments whereas employment grew by roughly 30% in larger establishments, regardless of potential occupational exposure to and complementarity with AI. These divergent growth rates reflect longer-term trends observed over the past decade. In particular, HELC and HEHC jobs grew significantly faster in larger establishments with the number of jobs in each of these occupational groups more than doubling over the past decade.

Employment growth in industries potentially more exposed to and less complementary with artificial intelligence was not significantly different than that in other industries from the fourth quarter of 2022 to the third quarter of 2025

Firm-level AI adoption rates vary considerably across industries (Statistics Canada, 2024a; 2024b). To get a sense of whether the advent of generative AI has slowed employment and earnings growth in industries potentially more exposed to and less complementary with AI, the following linear regression model was estimated at the industry level, as measured by the four-digit North American Industry Classification System excluding public administration, educational services, and health care and social assistance:

$$\Delta \ln y_{2022q4 to 2025q3,i} = \alpha + \beta_1 HELC_{2021,i} + \beta_2 HEHC_{2021,i} + \gamma \Delta \ln y_{2016q4 to 2019q3,i} + \theta X + u_i \ ,$$

where $\Delta\ln\ y_{2022q4\ to\ 2025q3,i}$ is the change in the natural logarithm of a given outcome in industry *i* from the fourth quarter of 2022 to the third quarter of 2025.[12] Two outcomes were considered: (1) employment and (2) average weekly earnings. $HELC_{2021,i}$ and $HEHC_{2021,i}$ denote the share of HELC and HEHC jobs, respectively, in industry *i* from 2021 (the share of LE jobs was excluded to avoid multicollinearity). The term $\Delta\ln\ y_{2016q4\ to\ 2019q3,i}$ denotes the change in the log outcome from the fourth quarter of 2016 to the third quarter of 2019 for capturing pre-trends before the pandemic. The last term, *X*, captures within industry *i* the share of teleworkable jobs in 2021 based on telework potential (Dingel and Neiman, 2020), the share of unionized jobs in 2021, and the share of employees in enterprises with more than 500 workers in 2022.

12. November 2022 falls in the fourth quarter of 2022. At the time of this study, the latest available quarterly data on employment by industry were from the third quarter of 2025.

The outcome and pre-trend data were obtained from the Survey of Employment, Payrolls and Hours (Table 14-10-0220-01). The share of employees in enterprises with more than 500 workers was obtained from the 2022 Longitudinal Worker File (the latest available year at the time). The remaining covariates were obtained from the 2021 Census of Population. The share of HELC and HEHC occupations within industries remained stable across the 2016 and 2021 censuses of population, so it is unlikely that these would have changed in any significant way from 2021 to 2025.

Accounting for pre-trends in employment growth before the pandemic, firm size, unionization and the potential for telework across industries, a one percentage point increase in the share of HELC jobs was associated with a 0.039% decrease in employment growth from the fourth quarter of 2022 to the third quarter of 2025. By contrast, a one percentage point increase in the share of HEHC jobs was associated with a 0.104% increase in employment growth over the same period. However, neither of these results was statistically significant. Accounting for pre-trends in average weekly earnings growth before the pandemic, firm size, unionization and the potential for telework across industries, a one percentage point increase in the share of HELC jobs was associated with a 0.038% decrease in average weekly earnings growth, while a one percentage point increase in the share of HEHC jobs was associated with a 0.057% decrease. Once again, neither effect was statistically significant. These results suggest that there is no clear evidence of a slowdown in employment or weekly earnings growth in industries potentially more exposed to and less complementary with AI.

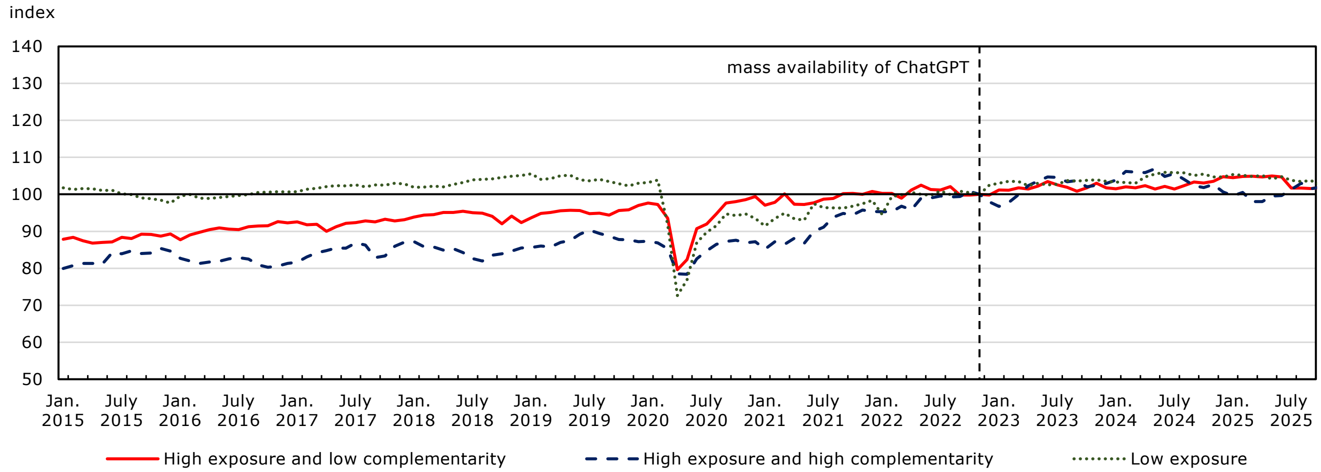
Coding-intensive jobs grew at a similar rate as other jobs from November 2022 to December 2025

Given AI's growing coding and debugging capabilities, there are concerns that AI could be supplanting the role of computer programmers and other coding-intensive jobs that are a subset of HELC jobs described in footnote 5. From November 2022 to December 2025, coding-intensive professions grew by roughly 15% compared with a growth rate of about 5% for other jobs, albeit the difference was not statistically significant (Chart 5). Over the longer term, coding-intensive professions grew substantially faster than other jobs over the last decade. And coding-intensive jobs were largely shielded from the immediate negative shocks of the pandemic relative to other jobs.

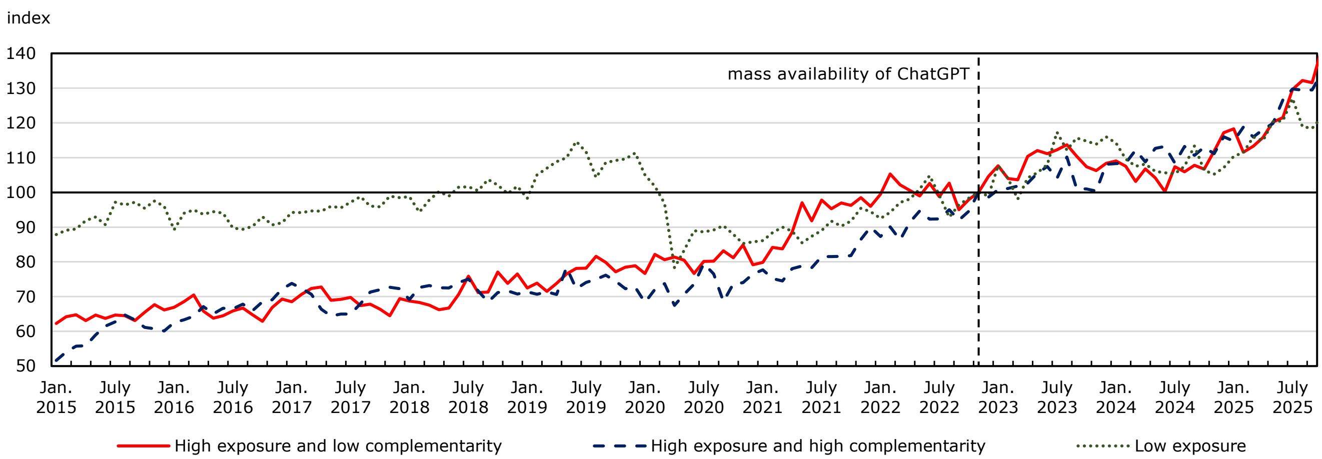
There are growing concerns regarding AI replacing entry-level tasks such as writing basic code. Brynjolfsson et al. (2025) found that the relative number of software developers younger than 30 in the United States has decreased since November 2022. Chart 6 shows job growth in Canadian coding-intensive professions by age group. Employees aged 30 to 49 generally saw more robust employment gains compared with their younger counterparts aged 15 to 29. In December 2025, employment among those aged 15 to 29 in coding-intensive jobs was about the same as it was in November 2022, while employment among those aged 30 to 49 was almost 30% higher. This divergence has been statistically significant since late 2024. In absolute terms, there were twice as many employees aged 30 to 49 in coding-intensive jobs in November 2022 relative to those aged 15 to 29. By December 2025, there were three times as many. For other jobs, this ratio remained stable at around 1.5 over the last decade.

Chart 4
Employment growth by potential artificial intelligence occupational exposure and complementarity by establishment size (November 2022 = 100, seasonally adjusted), January 2015 to December 2025

A - Establishments with 500 or fewer workers

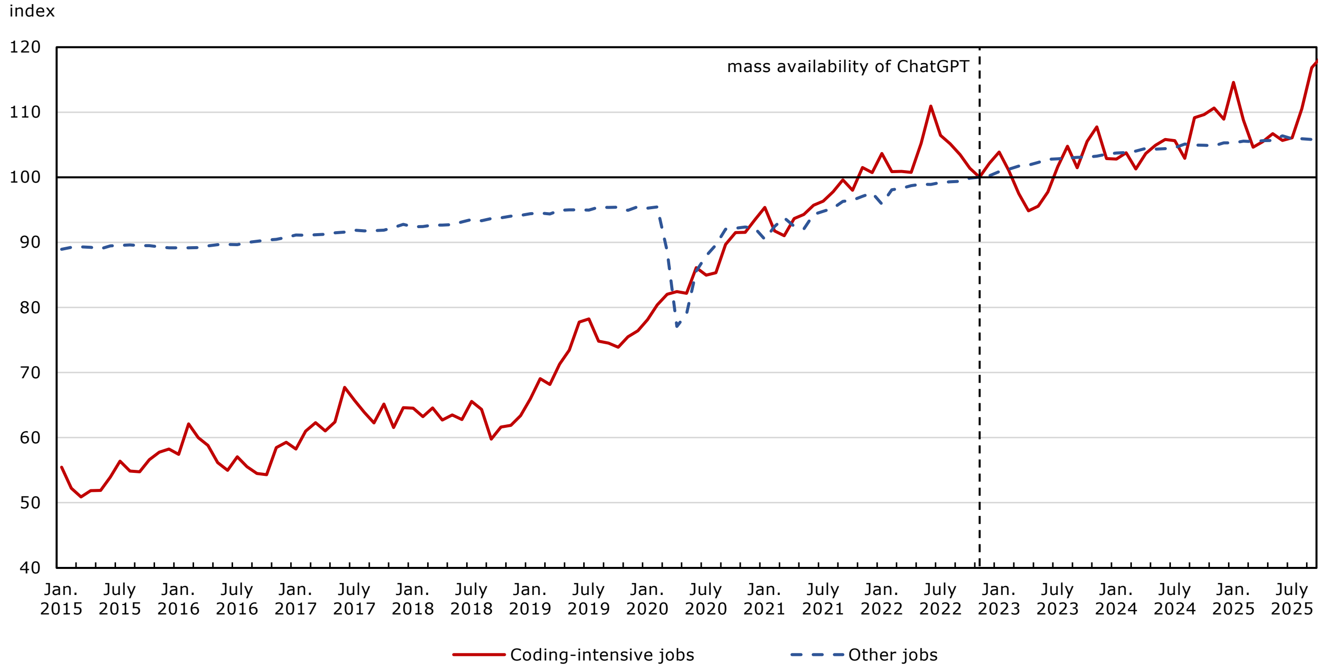


B - Establishments with more than 500 workers



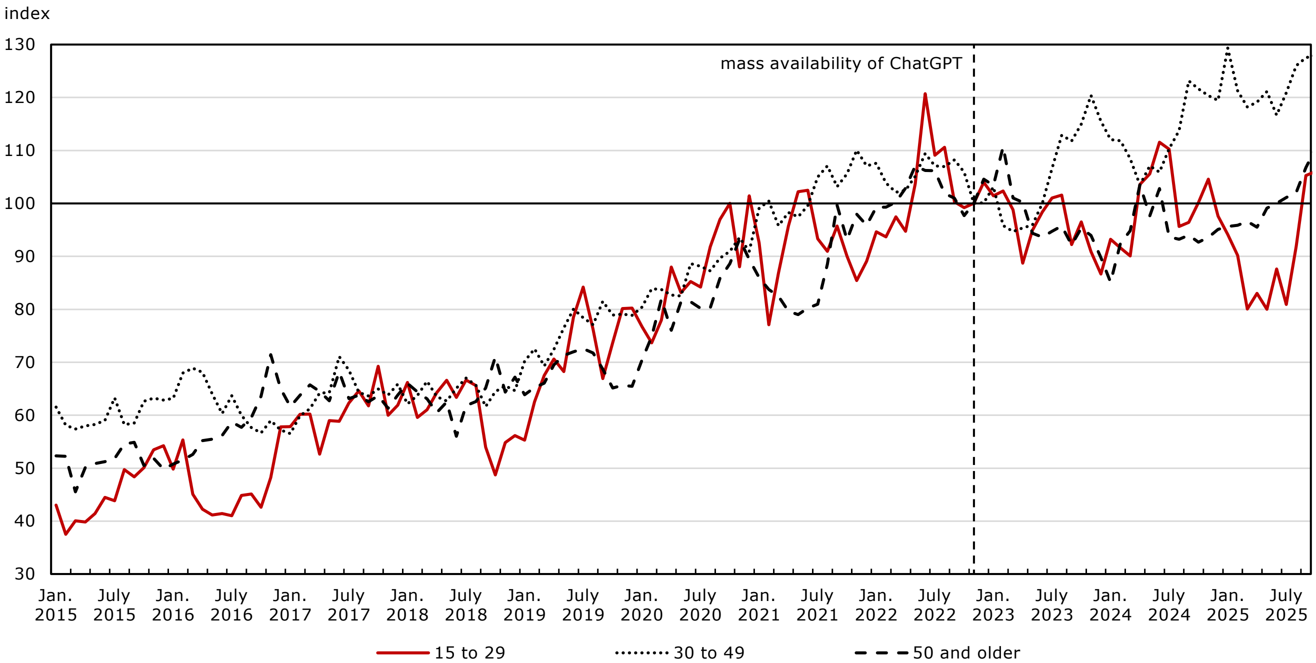
Notes: The dashed vertical line demarcates the beginning of mass availability of ChatGPT in November 2022. The solid horizontal line demarcates the baseline of the employment growth index. Any point above the line indicates a higher employment level relative to the one observed in November 2022 and any point below the line indicates a lower employment level. Employment refers to the main job of employees aged 15 and older. Public administration, educational services, and health care and social assistance were excluded since the majority of employers in these industries employ more than 500 workers which would make comparing panel (a) and (b) challenging. Employment growth is expressed relative to the level observed in November 2022. For example, an index of 110 would indicate 10% growth (110 minus 100) in employment relative to the November 2022 level, and index of 90 would indicate that employment was 10% lower (90 minus 100) relative to the November 2022 level. Employment was disaggregated based on the complementarity-adjusted artificial intelligence occupational exposure (C-AIOE) index developed by Felten et al. (2021) and Pizzinelli et al. (2023). An occupation has potentially high exposure if its AIOE index exceeds the median AIOE across all occupations; otherwise it is considered to have low exposure. Similarly, an occupation is considered to have potentially high complementarity if its complementarity parameter exceeds the median complementarity across all occupations; otherwise it is considered to have low complementarity.
Sources: Statistics Canada, Labour Force Survey, January 2015 to December 2025; and Occupational Information Network.

Chart 5
Employment growth among coding-intensive jobs (November 2022 = 100, seasonally adjusted), January 2015 to December 2025



Notes: The dashed vertical line demarcates the beginning of mass availability of ChatGPT in November 2022. The solid horizontal line demarcates the baseline of the employment growth index. Any point above the line indicates a higher employment level relative to the one observed in November 2022 and any point below the line indicates a lower employment level. Employment refers to the main job of employees aged 15 and older. The following 2021 National Occupational Classification occupations were selected as coding-intensive jobs: data scientists, cybersecurity specialists, business systems specialists, information systems specialists, database analysts and data administrators, computer systems developers and programmers, software engineers and designers, software developers and programmers, web designers, and web developers and programmers. Employment growth is expressed relative to the level observed in November 2022. For example, an index of 110 would indicate 10% growth (110 minus 100) in employment relative to the November 2022 level, and an index of 90 would indicate that employment was 10% lower (90 minus 100) relative to the November 2022 level. Employment was disaggregated based on the complementarity-adjusted artificial intelligence occupational exposure (C-AIOE) index developed by Felten et al. (2021) and Pizzinelli et al. (2023). An occupation has potentially high exposure if its AIOE index exceeds the median AIOE across all occupations; otherwise it is considered to have low exposure. Similarly, an occupation is considered to have potentially high complementarity if its complementarity parameter exceeds the median complementarity across all occupations; otherwise it is considered to have low complementarity.
Sources: Statistics Canada, Labour Force Survey, January 2015 to December 2025; and Occupational Information Network.

Chart 6
Employment growth among coding-intensive jobs by age group (November 2022 = 100, seasonally adjusted), January 2015 to December 2025



Notes: The dashed vertical line demarcates the beginning of mass availability of ChatGPT in November 2022. The solid horizontal line demarcates the baseline of the employment growth index. Any point above the line indicates a higher employment level relative to the one observed in November 2022 and any point below the line indicates a lower employment level. Employment refers to the main job of employees. The following 2021 National Occupational Classification occupations were selected as coding-intensive jobs: data scientists, cybersecurity specialists, business systems specialists, information systems specialists, database analysts and data administrators, computer systems developers and programmers, software engineers and designers, software developers and programmers, web designers, and web developers and programmers. Employment growth is expressed relative to the level observed in November 2022. For example, an index of 110 would indicate 10% growth (110 minus 100) in employment relative to the November 2022 level; an index of 90 would indicate that employment was 10% lower (90 minus 100) relative to the November 2022 level. Employment was disaggregated based on the complementarity-adjusted artificial intelligence occupational exposure (C-AIOE) index developed by Felten et al. (2021) and Pizzinelli et al. (2023). An occupation has potentially high exposure if its AIOE index exceeds the median AIOE across all occupations; otherwise it is considered to have low exposure. Similarly, an occupation is considered to have potentially high complementarity if its complementarity parameter exceeds the median complementarity across all occupations; otherwise it is considered to have low complementarity.
Sources: Statistics Canada, Labour Force Survey, January 2015 to December 2025; and Occupational Information Network.

However, it is not clear that the age divergence in coding-intensive professions is entirely caused by the advent of AI in 2022, because it was also around this time the economy was transitioning out of the pandemic and there was an increase in job vacancies, especially in technology-related jobs. It is possible that the relative decline in younger employees in coding-intensive jobs reflects a post-pandemic labour market adjustment process.

If AI replaces entry-level roles, this would introduce a new set of challenges regarding the development of senior-level expertise. If traditional entry-level positions are eliminated, new graduates could be expected to enter the workforce already equipped with advanced skills typically acquired through years of experience. This shift may disrupt traditional pathways for professional growth, necessitating new approaches to training and skill acquisition for future senior professionals.

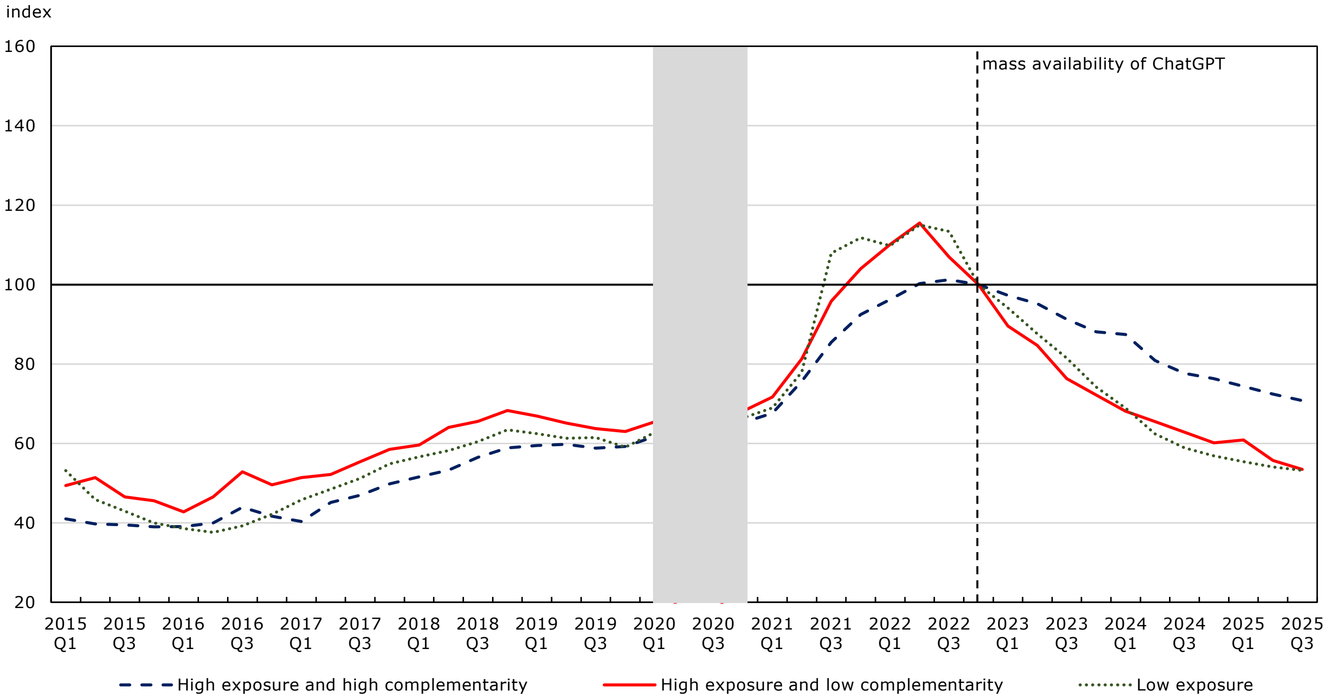
Job vacancies in occupations potentially more exposed to and less complementary with artificial intelligence have decreased at a similar rate as those potentially less exposed from the fourth quarter of 2022 to the third quarter of 2025

Understanding labour market dynamics requires more than analyzing existing employment levels. Examining job vacancies offers a complementary perspective, particularly when evaluating the impact of emerging technologies such as AI on skills demand. Unlike employment, which reflects realized matches between workers and jobs, job vacancies provide a forward-looking measure of employers' unmet demand for skills. Tracking vacancy trends can therefore shed light on whether demand for certain roles or skill sets is outpacing supply, highlight potential reallocation pressures within the labour market, and help identify occupations where technological disruption may be reshaping employer needs faster than workers can adapt.

The pandemic played a big role in restructuring skills demand over the last five years, as it may have accelerated technology adoption by businesses operating with reduced staff levels. Job vacancies started rising in late 2021 as many businesses started reopening. Vacancies reached a 10-year high of nearly 1 million by the second quarter of 2022 (Statistics Canada, 2025c). Chart 7 shows that this surge was largely driven by HELC and LE vacancies. This unmet skills demand tapered off in late 2022, which also coincided with the release of ChatGPT and the proliferation of generative AI tools. Thus, it is unclear how much of the subsequent decline in job vacancies was caused by technological advancement and how much by a post-pandemic labour market adjustment.

Job vacancies in HELC and LE occupations decreased by almost 50% from the fourth quarter of 2022 to the third quarter of 2025. Vacancies in HEHC occupations decreased by about 30% over the same period. The difference in the decrease in vacancies between HEHC and other occupations was statistically significant, but the difference in the decrease in vacancies between HELC and LE jobs was not. These findings suggest that, so far, the unmet demand for skills potentially more exposed to and less complementary with AI has declined at a rate similar to the unmet demand for skills potentially less exposed to AI.

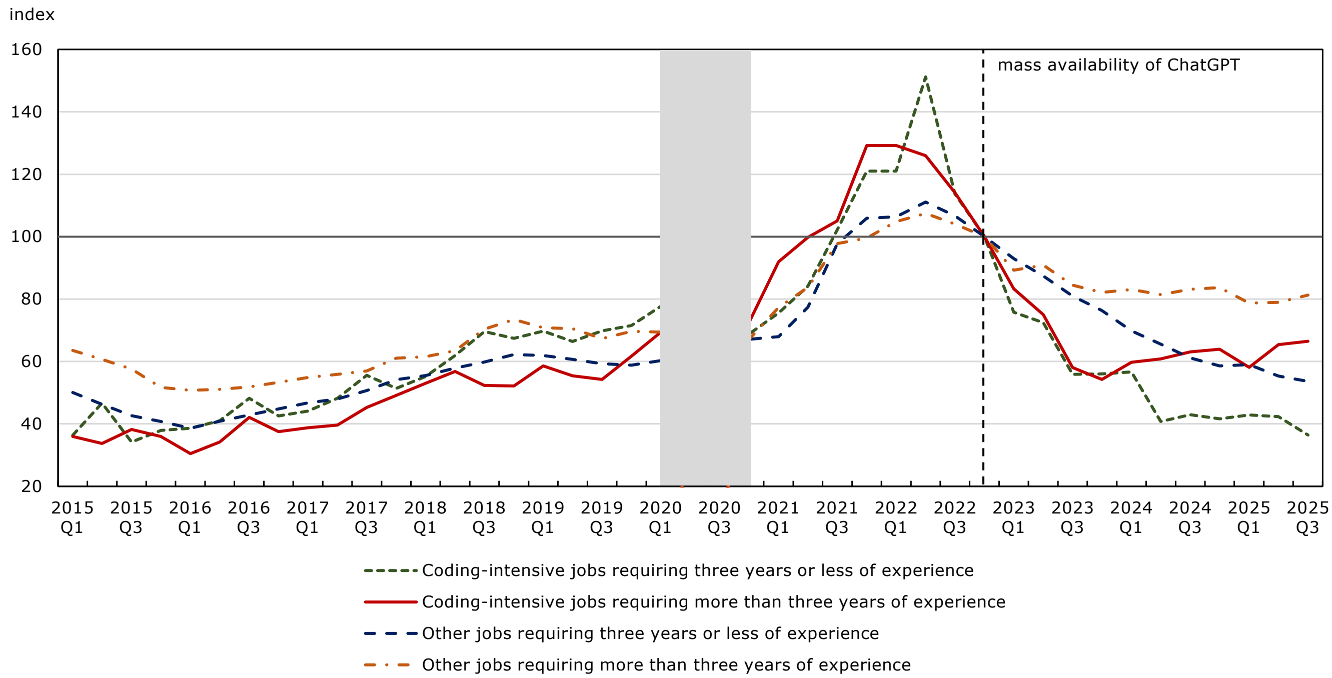
Chart 7
Job vacancy growth by potential artificial intelligence occupational exposure and complementarity (fourth quarter of 2022 = 100, seasonally adjusted), first quarter of 2015 to third quarter of 2025



Notes: The dashed vertical line demarcates the beginning of mass availability of ChatGPT in 2022 Q4. Job Vacancy and Wage Survey data collection was suspended for the second and third quarters of 2020. Therefore, data for these reference periods are not available. The solid horizontal line demarcates the baseline of the job vacancy growth index. Any point above the line indicates a higher vacancy level relative to the one observed in 2022 Q4 and any point below the line indicates a lower vacancy level. All types of job vacancies are included. Job vacancy growth is expressed relative to the level observed in 2022 Q4. For example, an index of 110 would indicate 10% growth (110 minus 100) in job vacancies relative to the 2022 Q4 level, and an index of 90 would indicate that job vacancies were 10% lower (90 minus 100) relative to the 2022 Q4 level. Jobs were disaggregated based on the complementarity-adjusted artificial intelligence occupational exposure (C-AIOE) index developed by Felten et al. (2021) and Pizzinelli et al. (2023). An occupation has potentially high exposure if its AIOE index exceeds the median AIOE across all occupations; otherwise it is considered to have low exposure. Similarly, an occupation is considered to have potentially high complementarity if its complementarity parameter exceeds the median complementarity across all occupations; otherwise it is considered to have low complementarity.
Sources: Statistics Canada, Job Vacancy and Wage Survey; and Occupational Information Network.

Coding-intensive job vacancies increased over the 2021-to-2022 period at a faster rate than other vacancies (Chart 8). However, after the fourth quarter of 2022, coding-intensive vacancies declined more steeply than vacancies in other occupations. By the third quarter of 2025, vacancies for coding-intensive jobs requiring three years of experience or less fell by about 60%, while those for such jobs requiring more experience fell by about 30% (a statistically significant difference). Vacancies in other occupations requiring three years of experience or less decreased by roughly 45%, while those in such occupations requiring more experience decreased by about 20% (a statistically significant difference). However, it is difficult to say with any degree of certainty whether the steeper decline in coding-intensive vacancies reflects AI supplanting coding tasks or is instead the result of a natural correction following the rapid expansion in coding-intensive vacancies over the 2021-to-2022 period, which may have temporarily satisfied employers' hiring needs. The drop in vacancies for coding-intensive jobs requiring less experience also aligns with the previous finding regarding the decrease in younger professionals in these occupations compared with their older counterparts. It is also possible that, as the pandemic-era boom in demand for coding-intensive roles subsided, the supply of young workers entering or retraining for these occupations declined, as the field became less attractive or perceived as offering fewer opportunities. However, given the relatively short timeline, this may be less applicable to degree holders—whose educational pathways and career decisions unfold over a longer period—but could be more relevant for those pursuing diplomas, certificates or shorter-term credentials, where training and entry into the labour market can occur over a shorter time.[13]

Chart 8
Job vacancy growth by minimum years of work experience (fourth quarter of 2022 = 100, seasonally adjusted), coding-intensive versus other jobs, first quarter of 2015 to third quarter of 2025



Notes: The dashed vertical line demarcates the beginning of mass availability of ChatGPT in 2022 Q4. Job Vacancy and Wage Survey data collection was suspended for the second and third quarters of 2020. Therefore, data for these reference periods are not available. The solid horizontal line demarcates the baseline of the job vacancy growth index. Any point above the line indicates a higher vacancy level relative to the one observed in 2022 Q4 and any point below the line indicates a lower vacancy level. All types of job vacancies are included. The following 2021 National Occupational Classification occupations were selected as coding-intensive jobs: data scientists, cybersecurity specialists, business systems specialists, information systems specialists, database analysts and data administrators, computer systems developers and programmers, software engineers and designers, software developers and programmers, web designers, and web developers and programmers. Job vacancy growth is expressed relative to the level observed in 2022 Q4. For example, an index of 110 would indicate 10% growth (110 minus 100) in job vacancies relative to the 2022 Q4 level, and an index of 90 would indicate that job vacancies were 10% lower (90 minus 100) relative to the 2022 Q4 level. Jobs were disaggregated based on the complementarity-adjusted artificial intelligence occupational exposure (C-AIOE) index developed by Felten et al. (2021) and Pizzinelli et al. (2023). An occupation has potentially high exposure if its AIOE index exceeds the median AIOE across all occupations; otherwise, it is considered to have low exposure. Similarly, an occupation is considered to have potentially high complementarity if its complementarity parameter exceeds the median complementarity across all occupations; otherwise, it is considered to have low complementarity.
Sources: Statistics Canada, Job Vacancy and Wage Survey; and Occupational Information Network.

Jobs potentially more exposed to artificial intelligence are generally of higher quality than other jobs

Although job displacement is the central concern associated with technological disruption, new technologies can also affect the **quality** of jobs, such as by reducing wages by lowering the barriers to entry into certain professions. For example, global positioning systems have decreased the need for taxi

13. An alternative measure developed by the International Labour Organization (ILO), which accounts for task variability, was also considered as a robustness check (Gmyrek et al., 2025). This measure is not directly comparable to the C-AIOE index, because it does not account for occupational complementarity with AI. ILO's measure groups occupations into six AI exposure categories: (1) jobs not exposed to AI, (2) jobs with low exposure and moderate task variability (minimal exposure), (3) jobs with low exposure and high task variability (gradient 1), (4) jobs with moderate exposure and high task variability (gradient 2), (5) jobs with significant exposure and high task variability (gradient 3), and (6) jobs with the highest relative exposure and lowest task variability (gradient 4). There were no statistically significant differences in job or vacancy growth across the six categories over the periods considered in this study.

or rideshare drivers to memorize maps. New technologies can also have a wage-increasing effect and lead to some occupations becoming more specialized. For example, the grammar and spell-check functionality of word processing software removed simple editing tasks for proofreaders, leading to these roles becoming more specialized, where they now help people improve their writing instead of simply correcting spelling and grammar.[14]

In terms of some job quality features, HEHC jobs were more likely than HELC and LE jobs to be full-time, permanent or both (i.e., full-time and permanent); be high-tenured (10 years or more with the same employer); be unionized or covered by a collective agreement; be associated with a workplace pension plan; and have higher hourly wage rates. With the exception of unionization or collective agreement coverage and high tenure, HELC jobs were more likely to be associated with the aforementioned job quality features than LE jobs. This ranking remained the same over the last decade.

HEHC jobs averaged around $48.50 per hour in 2025, compared with $35.40 per hour for HELC jobs and $28.50 per hour for LE jobs (Table 1). Real hourly wages grew by about 5% from November 2022 to December 2025, with no significant difference in growth rates across the three occupation groups. In the longer term, over the last decade, HEHC hourly wage rates grew at a relatively faster pace. This is not surprising given that, on average, around 60% of HEHC employees had a bachelor’s degree or above over the last decade, compared with around 40% of HELC employees and about 15% of LE employees.

Table 1
Selected job characteristics by occupational group, 2025

	Average hourly wages	Full-time jobs	Permanent jobs	Full-time permanent jobs	Jobs that are unionized or covered by a collective agreement	High-tenure employees[1]	Workplace pension plans
	dollars	percent					
Potential complementarity-adjusted artificial intelligence occupational exposure[2]							
High exposure and high complementarity	48.50	90.9	90.6	84.8	35.9	36.5	65.6
High exposure and low complementarity	35.40	83.1	88.5	76.8	22.9	25.0	51.5
Low exposure	28.50	77.7	86.1	70.3	32.9	24.2	41.2
Coding-intensive jobs[3]							
Yes	54.40	97.9	94.6	93.4	14.4	22.8	60.3
No	35.70	82.6	87.9	75.8	31.2	28.1	51.0

1. With their employer for 10 years or more.

2. The complementarity-adjusted artificial intelligence occupational exposure (C-AIOE) index was developed by Felten et al. (2021) and Pizzinelli et al. (2023). An occupation has potentially high exposure if its AIOE index exceeds the median AIOE across all occupations; otherwise, it is considered to have low exposure. Similarly, an occupation is considered to have potentially high complementarity if its complementarity parameter exceeds the median complementarity across all occupations; otherwise, it is considered to have low complementarity.

3. The following 2021 National Occupational Classification occupations were selected as coding-intensive jobs: data scientists, cybersecurity specialists, business systems specialists, information systems specialists, database analysts and data administrators, computer systems developers and programmers, software engineers and designers, software developers and programmers, web designers, and web developers and programmers.

Note: Main job held by employees aged 15 and older.

Source: Statistics Canada, Labour Force Survey, January to December 2025.

Around 91% of HEHC jobs were full-time in 2025, compared with 83% of HELC jobs and 78% of LE jobs. Around 91% of HEHC jobs were permanent, compared with 89% of HELC jobs and 86% of LE jobs. About 85% of HEHC jobs were both full-time and permanent, compared with 77% of HELC jobs and 70% of LE jobs.

14. https://hai.stanford.edu/news/assessing-the-real-impact-of-automation-on-jobs.

Around 36% of HEHC jobs were unionized or covered by a collective agreement, compared with 33% of LE jobs and 23% of HELC jobs. The relatively higher unionization or collective agreement coverage rates among HEHC and LE employees are explained by the composition of jobs within these broad categories. HEHC jobs include a relatively large concentration of professional health care, education and government occupations, which traditionally have strong union representation. Jobs classified as LE include a substantial number of skilled trades jobs, many of which are also unionized. By contrast, the lower rate of unionization or collective agreement coverage among HELC employees suggests that workers in these roles may have fewer avenues for support or recourse in the event of AI-driven job losses.

For more than one-third (37%) of HEHC jobs, employees had been with the same employer for at least 10 years, compared with 25% of HELC jobs and 24% of LE jobs. About 66% of HEHC jobs were associated with workplace pension plans, compared with 52% of HELC jobs and 41% of LE jobs.

Coding-intensive professions averaged around $54.40 per hour in 2025, compared with $35.70 per hour in other occupations. Real hourly wages in both occupation groups grew by around 5% from November 2022 to December 2025, with no significant difference between their growth trajectories. Over a 10-year period, however, real hourly wages in coding-intensive professions grew at a faster pace (15%) than those in other jobs (9%).

Nearly all coding-intensive jobs (98%) were full-time, compared with about 83% in other occupations. Coding-intensive jobs were also more likely to be permanent, compared with other jobs (95% versus 88%, respectively), and more likely to be both full-time and permanent (93% versus 76%, respectively). Coding-intensive jobs (60%) were also more likely to be associated with workplace pension plans than other jobs (51%). However, coding-intensive jobs were less likely to be high-tenured, compared with other jobs (23% versus 28%, respectively), and less likely to be unionized or covered by a collective agreement (14% versus 31%, respectively).

The change in occupational mix three years after the widespread availability of generative artificial intelligence is not markedly different from other periods of technological change

Chart 9 offers a historical perspective on how the change in occupational mix since the widespread availability of generative AI compares with other periods of technological change. Employing an adaptation of Duncan and Duncan's (1955) dissimilarity index, as in Gimbel et al. (2025), Chart 9 illustrates the degree of compositional change in the distribution of occupations relative to major technology adoption or availability periods.[15] The index is bounded by 0 and 100, with a higher value indicating greater dissimilarity in occupational composition relative to the reference period. Note that this index simply measures change over this period and does not show anything regarding the cause of that change. Changes can occur by workers switching jobs, workers losing jobs or unemployed people getting a new job—all of which can be caused by technological transformation or other economic factors.

In addition to calculating the dissimilarity index for AI with a reference month of November 2022, indices are also shown for the mass adoption of computers in the late 1980s, the spread of Internet technologies from the mid-1990s and the onset of the pandemic from April 2020, as well as a pre-pandemic baseline

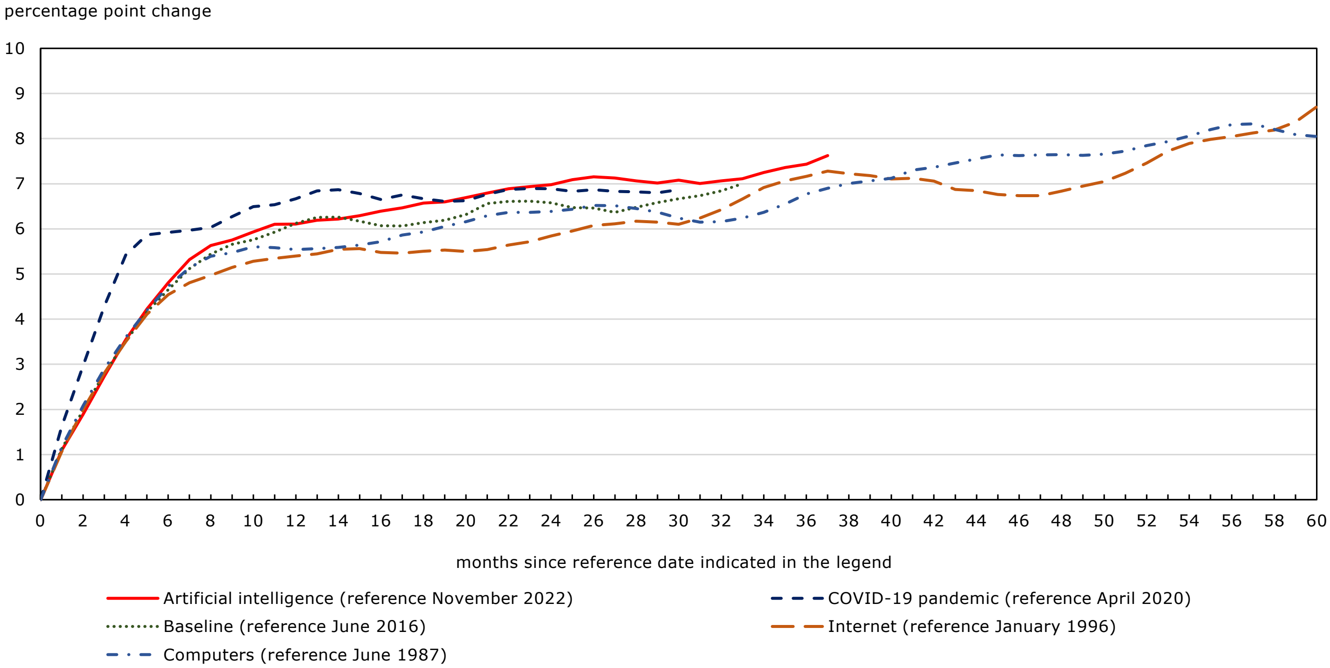
15. In this study, the dissimilarity index is calculated as the sum of the absolute differences in occupational shares observed in a given month and a reference month (i.e., November 2022 for generative AI). The sum is then multiplied by 50 (i.e., 100 divided by 2) so that it is bounded by 0 and 100, making it easy to interpret as percentage point differences relative to the reference month. This measure attempts to quantify how different the sum of occupations that make up the labour force is relative to another point in time.

period of relative stability from 2016 to 2019. The reference months were chosen to align with the U.S. study by Gimbel et al. (2025). Chart 9 shows that 37 months following the release of ChatGPT (i.e., November 2022 to December 2025), roughly 8% of employees would have to change jobs to restore the original occupational distribution observed in November 2022. Although this is a non-negligible number, it is not markedly different than the numbers observed three years following the mass adoption of computers or of the Internet. Moreover, the change in occupational mix since November 2022 does not appear to be substantially different than that observed over the reference period from 2016 to 2019. This suggests that the shifts in occupational composition may have already been underway before the mass availability of generative AI. Unsurprisingly, the onset of the pandemic in April 2020 generated more immediate shifts in occupational composition compared with the advent of computers, the Internet and generative AI. This was mostly driven by the sudden decline of service jobs in restaurants, retailers and other similar establishments induced by lockdowns and other health measures during the pandemic.

Although not directly comparable with the U.S. study by Gimbel et al. (2025), the Canadian results generally align with it. The results suggest that despite concerns about a rapid transformation of the labour market in the wake of generative AI, the change in Canada's occupational mix over the three years since the mass availability of generative AI is not markedly different from previous periods of technological disruption. The pace and magnitude of occupational reallocation following the advent of AI are comparable to those seen after the mass adoption of computers and the Internet.

It is important to note, however, that although generative AI is widely available to the general public, mass adoption of these technologies has not yet occurred in Canada. Recent data indicate that about 12% of Canadian businesses reported using AI in the delivery of goods or services (Bryan et al., 2025). One factor potentially limiting immediate widespread impact is the need for existing legacy systems and workflows to adapt to new AI technologies, which can slow integration and utilization. Consequently, the results depicted in Chart 9 may represent only the initial phase of technological diffusion. The full impact of generative AI on occupational dissimilarity remains to be seen. Therefore, the results from Chart 9 provide an alternative lens to assess whether generative AI has had a measurable effect on the occupational mix to date, while acknowledging that more widespread adoption—and further adaptation of legacy systems—in the future could potentially lead to greater changes in occupational composition.

Chart 9
Changes in occupational mix over different periods of technological change



Notes: Employment refers to the main job of employees aged 15 and older. The estimates presented above are based on an adaptation of Duncan and Duncan's (1955) dissimilarity index. It is calculated as the sum of the absolute differences in occupational shares in a given month and a reference month. This number is then multiplied by 50 (100 divided by 2) so that it can be interpreted as percentage point changes. The index indicates the percentage of employees in a given month who would have to change jobs to restore the occupational distribution observed in the reference month. A higher index indicates greater dissimilarity in occupational composition. This can occur by employees changing jobs, employees losing jobs or unemployed people getting new jobs. The index simply measures change in occupational mix and remains agnostic as to the reason for that change. The estimates presented here are based on six-month seasonally adjusted moving averages of employment across occupations classified at the five-digit level of the 2021 National Occupational Classification. This chart is based on a similar chart produced by Gimbel et al. (2025) for the United States. However, the estimates are not directly comparable because of the differences in data and occupational classification systems. The reference dates on this chart, except for the COVID-19 pandemic, refer to the approximate start date of the adoption and/or availability of the specified technology. Gimbel et al. (2025) used January 1984 as the reference date for mass adoption of computers. However, the Labour Force Survey did not have occupational information before January 1987. The reference date for the mass adoption of computers was therefore set to June 1987 (the first data point in the six-month moving average from January 1987 to June 1987). The baseline period was from June 2016 to December 2019, when the economy was relatively stable before the COVID-19 pandemic. The index for the COVID-19 pandemic covers the period from April 2020 to October 2022 only, since extending the index beyond October 2022 would conflate the potential effects of the mass availability of generative artificial intelligence, starting in November 2022.
Source: Statistics Canada, Labour Force Survey, January 1987 to December 2025.

Conclusion

While AI is often associated with concerns about widespread job loss, early evidence from Canada since the mass availability of generative AI tools like ChatGPT suggests a more nuanced reality, highlighting a labour market evolving amid a confluence of technological, demographic and economic factors. Overall employment continued to grow three years after the mass availability of generative AI, with no clear evidence that jobs potentially more exposed to and less complementary with AI experienced disproportionate declines compared with other occupations. Although distributional effects within demographics, such as weaker job growth for younger and less educated workers, were observed, these may be due to multiple underlying economic factors.

Three years following the widespread availability of generative AI, the overall mix of occupations in the Canadian labour market does not appear to be markedly different from previous periods of technological disruption, such as the introduction of computers or the Internet. This suggests that the pace and magnitude of occupational reallocation in response to generative AI, while non-negligible, align with historical patterns of technological change rather than representing an unprecedented transformation.

Nonetheless, substantial uncertainty persists. The diffusion of AI is still in its early stages, with mass adoption yet to occur and the adaptation of legacy systems potentially delaying impacts. Moreover, multiple overlapping economic shocks—from the aftermath of the pandemic to rapid demographic shifts caused by increased immigration and to recent trade dynamics with the United States—make it challenging to disentangle the effects of AI on employment outcomes. Despite the lack of evidence for large-scale AI-induced job loss to date, the transformative potential of AI and uncertainty about longer-term consequences highlight the need for continued tracking and monitoring of the labour market.

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