Economic and Social Reports, September 2024

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There are five new articles available in today's release of *Economic and Social Reports*.

Workers with a bachelor's degree or higher may be more exposed to artificial intelligence than those with a high school diploma or less

Recent developments in artificial intelligence (AI) have raised questions about the future of work. The article "Exposure to artificial intelligence in Canadian jobs: Experimental estimates" found that, in May 2021, 60% of workers in Canada had jobs that might be highly exposed to AI-related transformation, almost half of which could benefit from AI in the future. This compares with 40% of workers who are employed in jobs that might not be highly exposed to AI. The study applied a method developed by the International Monetary Fund to Canadian data.

Unlike previous technological transformations such as automation (which primarily affected lower educated workers), AI is more likely to affect highly educated workers given AI's growing capability to perform complex, non-routine and cognitive tasks. On average, 83% to 90% of workers with a bachelor's degree or higher held jobs that could be highly exposed to AI-related job transformation in May 2021, compared with 38% of workers with a high school diploma or less and 27% of workers with an apprenticeship or trades certificate. However, highly educated workers are also more likely to benefit from AI than their less educated counterparts.

These findings can inform labour market policies related to reskilling and career planning, but how workers, businesses and governments react and adapt to AI remains to be seen.

Immigrants provide almost as much lower-skilled labour as higher-skilled labour to the Canadian economy

It is commonly perceived that the Canadian immigration system mostly provides highly skilled workers to the Canadian labour market. However, the study "The provision of higher- and lower-skilled immigrant labour to the Canadian economy" finds that immigrants provide roughly the same amount of lower-skilled labour as it does higher-skilled labour. Around 35% of immigrants who landed in Canada in 2018 or 2019 worked in lower-skilled jobs in May 2021, compared with around 40% who were employed in higher-skilled jobs.

Compared with Canadian-born individuals, immigrants were two to five times more likely to be working in engineering, computer and information systems professions in May 2021. However, immigrants (3%) were less likely than Canadian-born individuals (6%) to be employed in the industrial, electrical and construction trades—a group of occupations with perceived labour challenges.

This study used the 2021 Census of Population, but its main findings are supported by the more recent March 2024 Labour Force Survey data, which allowed for the analysis of the more recent 2021 and 2022 immigrant landing cohort.

Workforce utilization of Canadian men with a nursing education

According to the article "Workforce utilization of Canadian men with a nursing education," in 2021, three-fifths (58%) of Canadian men aged 25 to 64 years with a nursing education were being fully utilized in the workforce, as they had occupations for which they were trained. This includes registered nurses, licensed practical nurses and other nursing occupations requiring a licence to practice in Canada. The other two-fifths (42%) had jobs that underutilized their nursing education or were not employed.

One-third (33%) of foreign-educated immigrant men with a nursing education were fully utilized in the workforce in 2021, far lower than observed for Canadian-born men (66%) and Canadian-educated immigrant men (71%).

Among foreign-educated immigrants with a nursing education, a lower percentage of men from the South Asian (36%), Black (38%) and Filipino (28%) population groups were fully utilized workers in 2021, compared with men from the White population group (49%). The difference between the Black and White population groups was attributable to variation in educational attainment, the world region of education, mother tongue and knowledge of English or French, age at immigration, and place of settlement.

Among Canadian-born men and Canadian-educated immigrant men, no racialized population group had a lower rate of skill utilization than those from the White population group. This points to the role of Canadian education and socialization as factors in the integration of racialized men in the nursing workforce.

Women-owned businesses have lower revenue growth rates than men-owned businesses after filing for a patent

On average, firms that patent have higher survival rates and higher revenue growth rates than those that do not patent. The study "Performance of women-owned businesses that patent" finds that women-owned and men-owned businesses perform differently following a patent. While survival rates and employment growth rates from 2001 to 2014 were similar five years after filing a patent, the revenue growth rate of women-owned businesses was 3.1 percentage points lower than that of men-owned businesses that patented. Moreover, women-owned businesses that patent were smaller and less likely to perform research and development, but more likely to be profitable than men-owned businesses.

The differences in revenue growth suggest that men- and women-owned businesses may differ in areas such as access to financing and knowledge-building opportunities, which affect the types of inventions women-owned businesses make and their ability to commercialize them successfully.

Academic jobs among the most prevalent positions held by doctoral degree graduates

Doctoral programs are often designed to train graduates for academic jobs, and this was reflected in the article "Most prevalent jobs of doctoral degree graduates by detailed field of study," which examined the issue with 2021 data. Among the 56 disciplines studied by men, 36 of the most prevalent jobs and 15 of the second most prevalent jobs were university professors and lecturers. Among the 56 disciplines studied by women, the results were almost identical: 35 of the most prevalent jobs and 15 of the second most prevalent jobs were university professors and lecturers.

Among the disciplines most highly linked to university professors and lecturers, female doctoral graduates were generally less likely than their male counterparts to be employed as university professors and lecturers in 2021. For example, the five disciplines most highly linked to university professors and lecturers among women were business administration and management, general (68.7%); registered nursing/registered nurse (61.0%); social work, general (56.6%); mathematics, general (56.2%); and exercise science and kinesiology (52.7%). In contrast, the five disciplines most highly linked to university professors and lecturers among men were business/commerce, general (74.2%); finance, general (69.2%); exercise science and kinesiology (69.0%); business administration and management, general (68.7%); and communication, general (66.4%).

These findings inform the decisions of students interested in pursuing a doctoral degree regarding the types of jobs they might expect to hold.

The September 2024 issue of *Economic and Social Reports*, Vol. 4, no. 09 (36280001), is now available. This issue contains the articles "Workforce utilization of Canadian men with a nursing education," "Most prevalent jobs of doctoral degree graduates by detailed field of study," "Performance of women-owned businesses that patent," "Exposure to artificial intelligence in Canadian jobs: Experimental estimates," and "The provision of higher- and lower-skilled immigrant labour to the Canadian economy."

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