

# Study: Automation and job transformation in Canada: Who is at risk?

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The recent development of several artificial intelligence applications—such as driverless vehicles, robo-writers and computer-aided medical diagnostics—has led to concerns about the role of human workers in the future workforce. The COVID-19 pandemic has added to these concerns, as work closures and the implications of physical distancing may lead businesses to turn to new, automated technologies to perform work activities. Although the long-term economic effects of the pandemic are still unknown, the integration of automation technology may be far-reaching since workplace closures have affected a broad range of industries and workers.

A new Statistics Canada study is the first to provide a detailed examination of the risk of job transformation due to automation faced by different groups of Canadian workers based on the tasks that they perform.

The study found that, overall, 10.6% of Canadian workers were at high risk of automation-related job transformation in 2016 (prior to COVID-19). A higher proportion (29.1%) were at a moderate risk.

Several groups had a relatively higher share of workers who were at high risk, including those who were 55 years and older, had no postsecondary credentials or postsecondary credentials in certain fields, had low literacy or numeracy proficiency, or had low employment income. Workers who were employed part time, in small firms, or in the manufacturing sector also faced a higher risk of automation-related job transformation.

Workers who were employed in certain occupations were at a higher risk than others. Notably, over one-third of workers in office support occupations (35.7%) were at a high risk of job transformation due to automation. Conversely, virtually no one in several professional occupations faced a high risk. These included professional occupations in law and social, community and government services; professional occupations in education services; and specialized middle management occupations in administrative services, financial and business services, and communications (except broadcasting).

It is important to note that these risk estimates are largely based on the technological feasibility of automating job tasks. However, there are several reasons why employers may not immediately replace humans with robots, even if it is technologically feasible to do so. These reasons include financial, legal and institutional factors; shortages in complementary skills; and product demand-side considerations. Consequently, a high risk of automation does not necessarily imply a high risk of job loss. That being said, these results were estimated prior to COVID-19, which may accelerate automation in the workplace in some instances.

## Note to readers

*The study "Automation and Job Transformation in Canada: Who's at Risk?" uses the 2016 Longitudinal and International Study of Adults and draws on previous research that provides estimates of automation risk by occupation. Automation risk estimates are produced by various worker and firm characteristics and account for 25 different tasks that may vary within the same occupation, such as instructing, selling products or services, level of problem solving or performing physical work. A high risk of automation-related job transformation is defined as a probability of 70% or more, while a moderate risk is defined as a probability of between 50% and 70%.*



**Definitions, data sources and methods: survey number [5144](#).**

The study "[Automation and Job Transformation in Canada: Who's at Risk?](#)" and a shorter summary article, "[Automation, workers and COVID-19](#)," are now available.

For more information, contact us (toll-free 1-800-263-1136; 514-283-8300; [STATCAN.infostats-infostats.STATCAN@canada.ca](#)).

To enquire about the concepts, methods or data quality of this release, contact Marc Frenette, [marc.frenette@canada.ca](#), Social Analysis and Modelling Division.