

EVIDENCE BRIEF

The **Social Sciences and Humanities Research Council** in collaboration with the **Future Skills Centre**

SSHRC's *Imagining Canada's Future* initiative mobilizes social sciences and humanities research to address emerging economic, societal and knowledge needs for Canada, and help guide decision-making across all sectors toward a better future. This evidence brief addresses the Future Challenge Area of: **Skills and Work in the Digital Economy**

Evaluating the future of skills, jobs and policies for the post-COVID digital economy

About the project

The lack of real-time data to track the impact that COVID-19 has had on the transition to the digital economy has created significant gaps in knowledge for organizations and policy-makers alike. The objective of our knowledge synthesis project is to fill this gap by providing:

1. clearer broad-based evidence on the shifting landscape for organizations and workers,
2. evidence about pre-COVID-19 and current predictions for the effect of digital technologies on future jobs and skill requirements, and
3. a review of policies that may help smooth the transition for workers and organizations. Our findings draw on a mix of text-based and non-text-based sources of data and a multi-faceted, mixed-methods approach to analyze available data and synthesize results from peer-reviewed and grey literature (newspapers, think tank and consulting reports) related to these topics. The breadth of methods was employed to enable us to comment on the rapidly changing environment in the face of both technical change and the pandemic, given that time lags associated with official data releases are often considerable.

Key findings

- Prior to the pandemic, the commercialization and diffusion of AI, data science and robotic-related technologies was growing at a rapid pace in Canada and globally.
- Lockdowns and restrictions instated due to COVID-19 caused a severe recession that delayed many Canadian firms' investment and adoption plans for these technologies.
- Evidence suggests the pace of innovation related to AI, data science and robotic-related technology slowed on aggregate during the pandemic.
- The commercialization and innovation slowdown may translate into a later onset of severe labour market disruptions and emergence of skill gaps related to these technologies than predicted pre-COVID.
- Trends since December 2020, if not interrupted by further lockdowns or economic disruption due to future COVID-19 waves, suggest that employment opportunities related to AI and data science will quickly return to their pre-pandemic levels and usher in increased productivity growth.
- Estimates for the automation-related risk of job transformation/loss, the future path of technical change and related forecasts for the state of the labour market in the peer-reviewed literature were made prior to the onset of the pandemic and do not generally focus on the Canadian economy.
- Most estimates for the automation-related risk of job transformation/loss in Canada come from reports undertaken by consulting firms and/or think tanks.
- There remain significant differences in the estimated number of jobs that are at risk of replacement and/or transformation as a result of automation, with the most recent studies indicating a range of 10% to 22% for Canada instead of the previously estimated range of 9% to 42%.

- Recent Canadian studies found no significant disparities in the risk of job loss/transformation due to automation related to gender, or disability.
- The risk of automation-related job transformation appears to be larger for younger and older workers (18-24 and 55+), for workers in occupations with a higher share of routine tasks and for individuals with lower levels of educational attainment.
- Employment and Social Development Canada's long-term labour market projections indicate that labour market

shortages in the next 10 years are likely in areas related to computer science, computer software and mechanical engineering.

- Recent data on job postings and vacancies show Canadian firms' demand for digital skills is growing rapidly and the number of vacancies in professional, scientific and technical services, and for computer and information systems professionals has increased to record levels, indicating skills in these areas may already be in short supply despite the large number of currently unemployed workers.

Policy implications

- Policy-makers may consider smoothing the transition to the digital economy for firms and workers through basic income supports, programs targeting business investment and encouraging upskilling, and retraining of workers, as well as promoting the acquisition of skills in high demand through micro-credential programs, co-ops or internships, and post-secondary education in STEM-related fields.
- The amount of support necessary to retrain workers displaced by the adoption of new technologies to obtain employment in new sectors/occupations will depend on factors such as their existing education levels and the difference between their existing skills set and the required skills in jobs to which they will transition.
- The level of intervention required to aid in transition will depend on the speed of the adoption of new technologies and the age distribution of workers.
- Shortcomings associated with the available data indicate that more emphasis should be placed on the development of high-quality, real-time data that can be used by researchers and policy-makers to improve the tracking of evolving trends in the speed of innovation and diffusion of digital technologies, job vacancies and skill acquisition to better assess the need for labour market intervention and support for Canadian firms and workers.

CONTACT THE RESEARCHER

Michelle Alexopoulos, Professor of Economics, University of Toronto, and Deputy Vice-President, Canadian Economics Association; m.alexopoulos@utoronto.ca

Kelly Lyons, Professor, Faculty of Information, University of Toronto; cross-appointed to the Department of Computer Science; kelly.lyons@utoronto.ca

FURTHER INFORMATION

▶ [Read the full report](#)

The views expressed in this evidence brief are those of the authors and not those of SSHRC, the Future Skills Centre or the Government of Canada.

SSHRC is a funding agency of the Government of Canada. Through research grants, fellowships and scholarships, SSHRC supports research that provides key insights on the social, cultural, environmental and economic challenges and opportunities of our ever-changing world.

The Future Skills Centre (FSC) is a forward-thinking centre for research and collaboration, dedicated to preparing Canadians for employment success. As a pan-Canadian community, we are collaborating to rigorously identify, test, measure and share innovative approaches to assessing and developing the skills Canadians need to thrive in the days and years ahead.