

SKILLS FOR THE POST-PANDEMIC WORLD :: APRIL 2021

# Job Polarization in Canada

SEAN SPEER AND SOSINA BEZU



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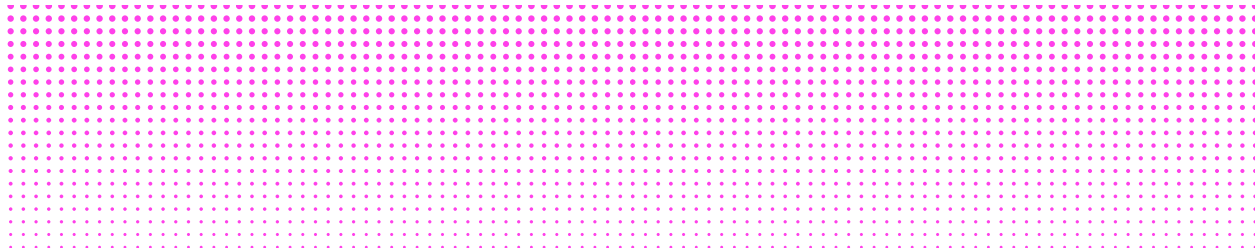


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## ABOUT THE PROJECT

**Skills for the Post Pandemic World** tackles key questions facing policymakers, employers, training providers and workers. It is urgent that society turns to face the fundamental changes in the labour market precipitated by the COVID-19 pandemic, and many players must rise to meet the new conditions of a post-pandemic world.

Society will slowly reopen and business will resume, but there will be no “return” to normal: the pandemic has dragged the future of work into the present. Digitization, work from home, plus other steepened trajectories and intensified shifts well documented in the future-of-work discourse are here now, and likely to stay.

Building on the collaborative success of the **Skills Next** series, the Public Policy Forum (PPF) and the Diversity Institute (DI), funded by the Future Skills Centre (FSC), and with new support from Microsoft, join once more to face these rapid societal shifts head-on, with research looking at the future of skills, training and retraining in ways that will chart a path forward as the pandemic continues to unfold.

The goal of this series is to build a robust policy ecosystem that supports the mobility needed for workers and employers to navigate the new reality. To do this, we examine eight key topics:

1. **Job polarization in Canada: Skills for the post-pandemic world**
2. **Digital infrastructure for the post-pandemic world**
3. **New working arrangements**
4. **Building inclusive workplaces**
5. **Immigration and the success of Canada’s post-pandemic economy**
6. **Innovation in post-secondary education**
7. **The mother of invention: Skills for innovation in the post-pandemic world**
8. **Supporting entrepreneurship and SMEs**

For more information about the project, please contact: **Andrée Loucks**, Policy Lead (PPF) and **Michael Crawford Urban**, acting Director, Research, Special Projects (FSC).

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Canada 

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## AUTHORS

### SEAN SPEER

Sean Speer is currently Fellow in Residence and Prime Minister of Canada Fellow at the Public Policy Forum. He is also an assistant professor at the University of Toronto's Munk School of Global Affairs and Public Policy. He previously served as a senior economic adviser to former Prime Minister Stephen Harper.

### SOSINA BEZU

Sosina Bezu is an economist with a PhD from the Norwegian University of Life Sciences. Bezu joined the Diversity Institute team with extensive experience in research design and implementation. Her research expertise covers quantitative research, behavioural experiments and policy analysis. Her past research focused on international development with a focus on African and Asian countries and covers topics such as livelihood, climate change, migration, youth and women. She has published more than a dozen articles in leading peer-reviewed international journals and has produced several book chapters and working papers. Bezu is also the author of a new "Labour Market Insights" series produced by Diversity Institute. Prior to her current position at Ryerson, she worked as a Senior Researcher at the Chr. Michelsen Institute (Norway).

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## FOREWORD

# SKILLS FOR THE POST-PANDEMIC WORLD

COVID-19 made a devastating debut on the world scene and launched a new era of how we live and work in our global society. The pandemic ushered in dramatic changes and deepened inequalities: health and economic crises, border closures, lockdowns, mass job losses and the curtailment of educational activities. Nevertheless, it also accelerated innovation and particularly the adoption of new technologies, compressed adoption cycles from years to weeks and transformed entire sectors – government, health care, education, retail, financial services and more.

As we see the prospect of a post-pandemic chapter ahead – thanks in part to the incredible pace of vaccine development and production – we are also challenged to imagine a different way of working, learning and living.

At the Future Skills Centre, we focus intently on ensuring that Canadians have the opportunities and resources to thrive in the future of work. It is critical to ensure that everyone, especially under-represented groups who have been disproportionately impacted by the pandemic, can access opportunities to succeed and share in Canada's prosperity. We are also committed to ensuring employers have access to the talent they need to innovate and grow. As we plan for a future after the pandemic – one in which digital skills and connections have become even more essential – we can't stress enough the urgency of developing skills strategies, policies, and programs that enable us to rebuild better and more inclusively.



This paper, part of the Skills for the Post-Pandemic World Series, explores the polarization of jobs in Canada and reveals a widening gap in the types of jobs available and the groups likely and able to fill them. Those with post-secondary education versus those with high school or less – as well as those who lack Canadian education credentials – have vastly different prospects in the workforce. Although this trend began prior to the pandemic, COVID-19 has exacerbated the discrepancy. In addition, young people, those with childcare needs, and racialized and marginalized groups, will likely continue to face greater obstacles to meaningful employment in the recovery period. Addressing these inequities will require a comprehensive strategy and a range of policy approaches. Please join us in considering what these findings mean for skills training and opportunities in Canada.

We thank our partners at the Diversity Institute and the Public Policy Forum for convening this research and these discussions. This is a crucial conversation as we turn our collective energy towards rebuilding our economies and educational systems to be better and more inclusive so that we can all share in a more prosperous future. We also thank the Government of Canada for its support of a national future skills strategy that builds on evidence generation and practical delivery of skills training and assessment programs.



**PEDRO BARATA**

Executive Director, Future Skills Centre





## EXECUTIVE SUMMARY

Significant changes over the past 30 years in the share of low-, mid-, and high-skilled jobs in Canada's economy represent an underexplored labour market trend. During this period, Canada has seen a continuous decline in the share of mid-skilled jobs and a steady increase in high-skilled jobs. The share of low-skilled jobs has moved slightly up and down at times but has basically been flat since 2000.

Canada's experience is not that different from most other advanced economies over this period. Indeed, most peer countries have experienced an increase in the proportion of high-skilled jobs, a reduction in mid-skilled jobs, and an increase in low-skilled ones. This trend is commonly referred to as "job polarization." As policymakers look to build back economies after the pandemic, these long-term shifts are important to understand and consider, particularly when high-skilled jobs pay, on average, almost four times what low-skilled ones do.

This report looks at job polarization, with the goal of helping Canadian policymakers and the general public better understand the trend, including causes, effects and how it differs among provinces, industries and workers. The goal is to facilitate a discussion and debate about these trends, what they mean for Canada's economy, and what public policy changes could help to minimize the more negative economic and social effects of the so-called "vanishing middle."

Job polarization has been under way in Canada over the past three decades, though this country's experience is less marked than the OECD average. On the whole, Canada has seen a 7.5-percentage-point increase in high-skilled occupations and declines in mid- and low-skilled ones. These changes have not been uniform across provinces. Ontario and Quebec saw mid-skilled jobs decline by more than 7.5 percentage points while British Columbia and Nova Scotia



**“ Economists David Green and Benjamin Sand have warned that: “The loss of good jobs with wages that could provide financial security for less educated workers raises the spectre of an increasingly unequal society.”**



saw drops of six and five percentage points respectively. Manitoba, Saskatchewan and Prince Edward Island have actually experienced small increases in the proportion of mid-skilled jobs in their economies, though the national average still trends towards a decrease in the proportion of the population working in these kinds of jobs.

Polarization also appears to have differing effects depending on the population group, though data gaps limit how much can be said about these differing effects. Statistics Canada, therefore, has a role to play in expanding its data collection and releasing more disaggregated data to the public to improve the understanding of how polarization differs for racialized Canadians, Indigenous people, disabled Canadians and younger workers, for example.

The need for further study is underscored by the fact that the way job polarization manifests itself in Canada is complicated. In addition to differences among provinces and populations, it is more pronounced in some industries than others.

But one thing is clear: The changes to the distribution of jobs represent a major economic, political and social development as there is less demand for the mid-skilled worker in the modern economy. Economists David Green and Benjamin Sand have warned that: “The loss of good jobs with wages that could provide financial security for less educated workers raises the spectre of an increasingly unequal society.” And an unequal society can create unrest - as it has in the U.S., where it seems to have contributed to the rise of political populism.

### **What can be done?**

Policymakers should think about how they can create a new generation of middle-class jobs, an exercise that should transform today’s low-skilled jobs into more mid-skilled ones. This could be done by finding ways of furthering the education and training of low-skilled workers, and

investing in productivity and modernizing labour market standards to reflect new and emerging forms of employment.

Policy can also play a role in helping to close the gap between people's credentials and skills and the market's recognition of them. This could include work on foreign-credential recognition, and reforms to labour regulations to address barriers such as discrimination. Other public policy steps, such as the expansion of childcare for working families could also make a big difference. But such changes will not happen overnight and will require buy-in from employers. Expanding vocational education and micro-credentialing to help those in low-skilled jobs keep up with changing labour-market demands are also avenues worth exploring.

As they turn their minds to post-pandemic planning, these ideas — and others that will emerge with more study — will be important for policymakers to consider.

# INTRODUCTION

COVID-19's unequal effects have deepened policy interest in questions about Canada's labour market, including with respect to such trends as automation, offshoring, the "gig economy," pay equity, and income inequality. There is a growing sense among activists, scholars and policymakers that efforts to "build back better" must be more responsive to these long-term trends that were already putting pressure on many workers prior to the pandemic.

One structural force that may be both a cause and effect of these broader labour-market developments is job polarization. This refers to the changing distribution of jobs in an economy according to different occupations, and across skill levels and educational backgrounds. It is an underexplored, multi-decade process that is having significant consequences for the economy, society and politics.

The 20th century's labour market saw most jobs clustered in and around the middle of the skills distribution. It was an inherently middle-class economy in which labour-intensive industries such as manufacturing had significant demand for the median worker who did not necessarily have post-secondary qualifications and carried out mostly routinized tasks.

**“ In the past three or four decades, however, labour-market demand in advanced economies has increasingly polarized with the relative share of low- and high-skilled jobs growing much faster than mid-skilled occupations. Some have described this trend as an “hourglass economy.”<sup>1</sup> Others refer to it as “the vanishing middle.”<sup>2</sup>**

No matter the nomenclature, this is a major trend that policymakers must try to better understand as they plan for post-pandemic recovery.

In a bifurcated labour market, there are various factors that can affect people's ability to find employment at different points along the skills distribution. It is certainly the case, for instance, that issues with respect to foreign credential recognition or systemic biases can lead to underemployment for racialized groups and immigrants.<sup>3</sup> There are also well-documented underemployment issues for youth (typically defined as those under 30 years of age<sup>4</sup>) and working mothers who may choose flexible low-skilled jobs due to dependent care demands.<sup>5</sup> Those affected may find themselves in occupations that are not commensurate with their credentials or skills, which has opportunity costs for them, their families and the economy as a whole.

Generally speaking, though, one's level of educational attainment is the key determinant of where individuals find employment along the skills distribution. Research shows that those with post-secondary qualifications are more likely to work in high-skilled occupations and those without post-secondary qualifications are more likely to be in low-skilled occupations.<sup>6, 7, 8</sup> This is evident, for instance, in the significant earnings gaps between those with and without post-secondary qualifications in Canada and across other advanced economies.<sup>i</sup>

The pandemic has only exacerbated this growing labour-market bifurcation along the lines of credentials and skills. Statistics Canada has found, for instance, that there is a clear relationship between the ability to telework and one's industry and level of educational attainment.<sup>9</sup> Although 40 percent of Canadian workers can telework, the percentage fluctuates from 25 percent for those with a high-school diploma to 60 percent for those with a bachelor's degree or higher.

**“ We can see even greater differences according to one's occupation. During the lockdown in April 2020, for example, 76 percent of workers in professional, scientific and technical services industries worked remotely, while the corresponding rate was only eight percent for workers in accommodation and food services and 19 percent in construction.”<sup>10</sup>**

These pandemic-induced differences are representative of the broader trend of job polarization, which predated the pandemic and is likely to be an ongoing labour-market pattern in its aftermath.

The purpose of this report is to help Canadian policymakers and the general public better understand job polarization, including its causes, effects and how it is manifesting in Canada among provinces,<sup>ii</sup> industries and different workers. The goal is to facilitate a discussion and debate about these trends, what they mean for the Canadian economy and society, and what, if any, role there is for public policy to address them.

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i As Canadian economists David Green and Benjamin Sand observe: “In Canada, however, the data show that the average wage in an occupation is highly correlated with measures of skill, such as years of education. Evidence from other countries (for example, Autor, Katz and Kearney 2008; Goos and Manning 2007) shows a similarly high association between wages and measures of skill across occupations.” See Green, D. and Sand, B. (2015). Has the Canadian labour market polarized? Institute for Research on Public Policy.

ii This analysis is based on Statistics Canada's annual disaggregated occupational data, which excludes the territories (Yukon, Northwest Territories and Nunavut). <https://www150.statcan.gc.ca/t1/tbl1/en/tv.action?pid=1410033501>

Our key findings are as follows:

- » Canada is not immune to this trend of job polarization. Although its experience is less marked than the OECD average, the past 30 years or so have witnessed a relative demand shift favouring high-skilled workers and placing less value on those at the middle of the skills distribution.
- » In the three decades since 1989, the share of mid-skilled jobs in Canada shrank from 58.5 percent to 52.6 percent. Unlike most other OECD countries, however, the share of low-skilled jobs did not increase. In fact, the share declined by 1.6 percentage points across those three decades.
- » Canada's job polarization has therefore not produced a U-shaped economy (with a greater share of jobs at the tails of the skills distribution), but rather it has involved a 7.5-percentage-point increase in high-skilled occupations and accompanying declines in both mid- and low-skilled jobs. The Canadian experience may therefore be described as a J-shaped economy.
- » Although the national share of mid-skilled jobs fell by six percentage points between 1989 and 2019, there was provincial-based variation. The most significant declines were in Ontario and Quebec, which each saw their share of mid-skilled jobs fall by more than 7.5 percentage points. This was followed by a decline of six and five percentage points in British Columbia and Nova Scotia, respectively.
- » Manitoba, Saskatchewan and Prince Edward Island, by contrast, have actually seen their mid-skilled jobs increase over this period, albeit by only small percentages.
- » Canadians employed in high-skilled jobs earn almost four times more than those working in low-skilled jobs.
- » Over the past three decades, the proportion of women in high-skilled jobs (37.7 percent) has come to exceed the proportion of men in high-skilled jobs (36.6 percent). Female employment in high-skilled jobs increased by more than 10 percentage points between 1989 and 2019, while the increase in male employment in high-skilled jobs was half of that.
- » Although census data enable us to see where different populations such as new immigrants find themselves along the skills distribution at a particular moment in time, significant data limitations preclude scholars and policymakers from understanding the job polarization effects on different populations and individual characteristics over time. It is critical, therefore, that Statistics Canada expand its data collection and analysis in order to better understand the long-term effects of job polarization on immigrants and racialized Canadians, Indigenous people, younger workers, and so forth.



The report stops short of outlining a comprehensive policy agenda to address job polarization, but it does point to some key policy areas such as education, training, labour standards modernization and productivity-enhancing investments to target underemployment and help pull low-skilled workers up the skills ladder. Our aim here is to draw attention to these labour-market trends and encourage policymakers to consider the causes and effects of job polarization as part of a skills agenda for a post-pandemic world.



# 1 WHAT IS JOB POLARIZATION?

**Churn and disruption in the labour market are hardly unprecedented. The past 250 years are marked by sweeping labour-market changes due to a combination of technology, trade and other forces. Previous episodes, such as the Industrial Revolution, exhibited even more heightened levels of disruption than recent decades have witnessed.<sup>11</sup>**

What distinguishes the current experience though is how labour demand is polarizing along skills-based lines.<sup>12</sup> The middle-class economy of the previous century is being replaced by what leading labour economist David Autor has described as a “U-shaped economy.”<sup>13</sup>

The basic idea here is that a combination of technological innovation and globalization is reshaping advanced economies and, in turn, polarizing labour demand. In particular, the shift from a goods-producing economy to a service-based economy has contributed to higher rates of employment growth in occupations at the top and bottom of the skills distribution and a smaller share of jobs in the middle.<sup>14, 15</sup> In effect, advanced economies have gone from a labour market in which most jobs were clustered in and around the middle of the skills-distribution to one in which they are increasingly concentrated at its upper and lower tails.

Economists Martin Goos and Alan Manning were the first to use the term “job polarization” to describe this labour-market trend in a 2007 journal article.<sup>16</sup> Their analysis showed how a combination of technology and trade was effectively hollowing out demand for mid-skilled workers in occupations that involved routine manual and cognitive skills. This work has since been further developed by leading economists such as Daron Acemoglu,<sup>17</sup> David Autor<sup>18</sup> and David Dorn.<sup>19</sup>

It is important to unpack the underlying ideas and analysis behind this contention. The conceptual explanation for job polarization is predicated on the idea that technology and offshoring can be a substitute for certain skills and occupations, but not for others. Automation and offshoring cannot substitute for non-routinized yet high-skilled occupations, such as a skilled litigator or biomedical researcher. They also cannot substitute for non-routinized yet manual and personalized tasks, such as those of a restaurant server, personal support worker or house cleaner.

But they can substitute for mid-skilled occupations that are routinized and impersonal.<sup>iii</sup> Think of a traditional manufacturing assembly line for instance. These types of jobs perform tasks that follow a well-defined linear structure or procedural routine and are therefore most susceptible to technology- or trade-induced dislocation.<sup>20, 21</sup>

The net effect is the distribution of jobs increasingly tilts towards the upper and lower tails because these occupations are either highly specialized or involve face-to-face proximity. Mid-skilled occupations, by contrast, are marked by routine manual or cognitive skills which are, in relative terms, subject to less demand in the modern economy.

This is not a backwards-looking trend either. There is reason to believe that it is likely to continue in the future as industries and firms adopt new labour-substituting technologies.

**“ Recent studies on labour automation in Canada estimate that 10 percent<sup>22</sup> to 22 percent<sup>23</sup> of Canadians are currently employed in jobs that are highly susceptible to automation.**

These studies further suggest that racialized minorities, youth and women are proportionally more likely to be engaged in occupations at higher risk of automation.<sup>24, 25, 26</sup>

The relative roles that technology and globalization have played in driving these trends is not fully clear, though, on balance, the scholarship seems to point towards technology playing a greater role.<sup>27, 28</sup> There is currently, however, no “horse race” analysis (e.g., X percent of routine job loss to

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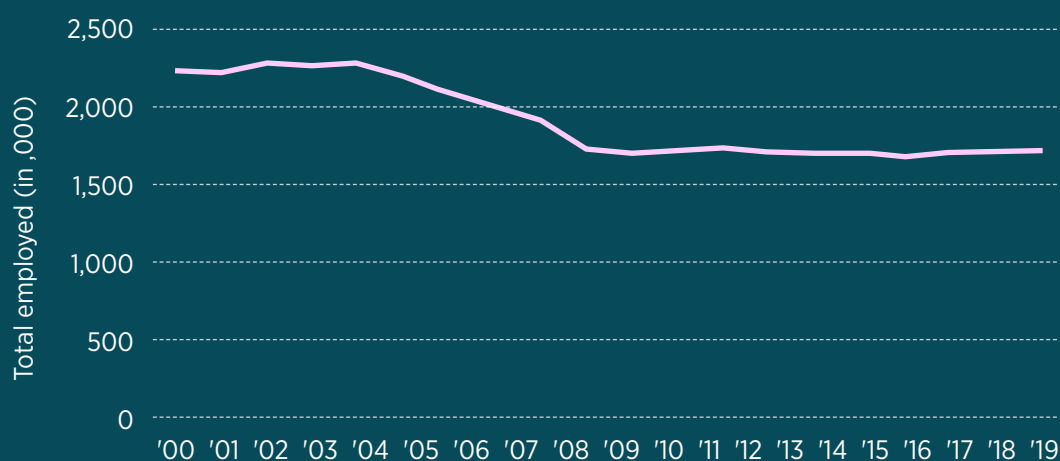
iii The distinction between routine and non-routine jobs is based on the pioneering work of Autor, Levy and Murnane. If the tasks involved can be summarized as a relatively small set of specific, repetitive activities accomplished by following well-defined instructions and procedures, the occupation is considered routine. If instead the job entails a larger number of tasks requiring flexibility, creativity, problem-solving or human interaction, the occupation is non-routine. See Autor, D., Levy, F. and Murnane, R. J. (2003). The skill content of recent technological change: An empirical explanation. Quarterly Journal of Economics: 1279-1333.

automation versus Y percent to globalization factors) that estimates the relative role of technology versus trade in hastening job polarization, though researchers have developed methods that could conceivably be used to develop such a line of inquiry.<sup>29, 30</sup> This body of research is still a work in progress, and, in any case, there are probably significant differences in the relative importance of these two factors across jurisdictions and sectors.<sup>31</sup>

The story of sectoral differences in job polarization is felt most acutely in manufacturing. It has been historically characterized by a large share of routinized, mid-skilled jobs and, as a result, it has been most susceptible to the disruption caused by the twin forces of technology and trade. Research shows that the decline in manufacturing employment has had a marked impact on jobs polarization in countries such as Canada and the United States.<sup>32</sup>

Take Canada's experience for instance. A 2020 study by Statistics Canada shows that manufacturing employment has fallen by roughly half a million workers in this century (see Figure 1).<sup>33</sup> This drop in employment has been concentrated geographically in southwestern Ontario in general and among men without post-secondary qualifications across the country in particular.<sup>34</sup> As we discuss in a later section, this seems to correlate with the regional intensity of job polarization in Canada.

**FIGURE 1: MANUFACTURING EMPLOYMENT IN CANADA, 2000 TO 2019**



**Source:** Statistics Canada. (2020). Table 14-10-0023-01 Labour force characteristics by industry, annual (x 1,000).

But manufacturing is hardly the only sector affected by these trends — in fact, one study estimates that the sharp decline in manufacturing employment is generally responsible for only about 40 percent of job polarization in advanced economies.<sup>35</sup> Examples of other mid-skilled occupations include sales, office and administrative support, construction, maintenance and

repair, transportation and material moving. These jobs may require differing levels of educational credentials, but what is broadly shared among them is that they are generally procedural, rules-based and routinized. These common characteristics are what make them highly susceptible to technology- or trade-induced dislocation.

A key finding from the research, however, is that it would be wrong to think about job polarization as a shift in the sectoral composition of the economy based solely on a move from routinized sectors (such as manufacturing) to non-routinized sectors (such as financial services). Instead, it is also a shift in the occupational composition within all industries based on a move from routine to non-routine jobs.<sup>36, 37</sup>

**“ According to a 2020 OECD report, two-thirds of job polarization is caused by occupational changes within individual industries and the other third is due to reallocation of employment away from less polarized industries towards more highly polarized ones.”<sup>38</sup>**

This is a key point: It tells us that the substitution of technology or offshoring for mid-skilled jobs (involving routine manual and cognitive skills) is occurring across the entire economy and even within industries and firms. It gets even more complicated because there is evidence that, although the substitution of technology or offshoring destroys mid-skilled jobs, it is complementary to both high- and low-skilled jobs.<sup>39</sup> In other words, while technology and offshoring may be killing some mid-skilled jobs in advanced economies, it is increasingly helping low-skill and high-skill workers do theirs in these places.

There is a gender dynamic at play as well. The growing importance of women in the labour market, as evidenced by rising participation rates over the past quarter century, has contributed to these trends.<sup>40</sup> Their relatively high rates of educational attainment and self-selection into certain sectors and occupations seem to accentuate polarization. Women have, on one hand, increasingly outstripped men with respect to educational attainment rates in advanced economies and in turn have moved disproportionately into high-skilled jobs.<sup>41</sup> But, on the other hand, there is evidence that women (particularly those without post-secondary qualifications) still tend to disproportionately self-select into sectors and occupations with lower wages.<sup>42</sup>

There are various factors that contribute to a tendency for women to find themselves overly represented at the tails of the skills distribution. Research, for instance, shows that the rise of computer technology in advanced economies has complemented the growing representation of



**A recent OECD study shows that job polarization is not primarily a function of mid-skilled workers losing their jobs mid-career, but rather is reflected in the types of occupations in which new workers are finding themselves.**

**Source:** Organisation for Economic Co-operation and Development (OECD). (2020). What is happening to middle-skill workers?. Employment Outlook 2020: Worker Security and the COVID-19 Crisis.

women in high-skilled jobs.<sup>43</sup> But, at the same time, a combination of historical gender norms, the gendering of particular forms of work, and the ongoing role that women tend to disproportionately play in unpaid childcare (and other forms of unpaid care work) has also contributed to a relative increase in low-skilled jobs.<sup>44</sup> The upshot is that, over the past quarter century or so, the patterns of female employment have not only tracked, but indeed influenced, the broader trends of employment polarization.

Younger workers entering the labour market are also key to understanding the causes and effects of job polarization. A recent OECD study shows that job polarization is not primarily a function of mid-skilled workers losing their jobs mid-career, but rather is reflected in the types of occupations in which new workers are finding themselves.<sup>45</sup> For cohorts born before 1970, roughly 33 percent of workers were employed in mid-skilled occupations when aged 25 to 29. For those born after 1970, the share falls to 27 percent. The share of those in high-skilled jobs exhibits the reverse pattern.

More generally, job polarization seems to correlate with educational attainment levels. That is to say those with post-secondary qualifications are disproportionately represented in high-skilled occupations and those without post-secondary qualifications are overly concentrated in low-skilled jobs.<sup>46</sup>

There are, of course, exceptions to this correlation, including, for instance, new immigrants and youth who are much more likely to be underemployed and working mothers who choose flexible lower-skill jobs to accommodate demands on their time made by dependent care work. As discussed later, there is a role for public policy to help these underemployed workers better maximize the returns on their credentials and skills.



But, as a general rule, the research finds that job polarization is primarily shaped by the modern labour market's growing demand for cognitive and technological skills for which post-secondary qualifications tend to be treated as a proxy.<sup>47, 48</sup> This is evident, for instance, in the significant earnings gaps between those with and without post-secondary qualifications in Canada and across other advanced economies.<sup>49</sup>

Accounting for these various factors, job polarization is being experienced across advanced economies with virtually no exceptions. A 2017 study published by the OECD, for instance, found that of 23 countries studied, every one of them saw their aggregate share of mid-skilled jobs fall between the mid-1990s and 2015.<sup>50</sup> The average percentage-point drop in the share of mid-skilled jobs during this period was 9.5. The largest decline was Austria at 16.8 percentage points. Canada was below the average at 6.2 percentage points (see Table 1).

**TABLE 1: PERCENTAGE POINT CHANGE IN SHARE OF TOTAL EMPLOYMENT BY SKILL LEVEL, (BOTH SEXES), 1995 TO 2015**

OECD countries	Low-skilled jobs	Mid-skilled jobs	High-skilled jobs
Austria	3.0	-16.8	13.8
Switzerland	0.0	-15.6	15.6
Ireland	0.7	-15.1	14.4
Spain	3.4	-13.6	10.2
Greece	8.7	-13.2	4.5
Denmark	4.5	-12.7	8.2
France	4.1	-12.1	8.0
Sweden	3.0	-11.0	8.0
Portugal	2.7	-10.7	8.0
United Kingdom	1.1	-10.2	9.1
Norway	3.9	-10.0	6.1
Netherlands	4.2	-9.7	5.5
Finland	0.8	-9.7	8.9
Italy	4.6	-9.3	4.8
Germany	3.4	-8.2	4.7
Belgium	1.4	-7.3	6.0
United States	1.2	-6.6	5.3
Slovenia	-2.3	-6.5	8.8
Slovak Republic	0.9	-5.4	4.5
Japan	2.6	-5.2	2.5
Hungary	-5.0	-2.5	7.5
Czech Republic	-5.0	-2.1	7.1
Canada	1.8	-6.2	4.3
<b>TOTAL</b>	<b>1.9</b>	<b>-9.5</b>	<b>7.6</b>

**Source:** Organisation for Economic Co-operation and Development (OECD). (2017). Job polarisation by country: Percentage point change in share of total employment, 1995 to 2015. OECD employment outlook 2017.

## 2 IS JOB POLARIZATION HAPPENING IN CANADA?

**The previous section provided a conceptual and empirical overview of job polarization in advanced economies. This section aims to focus the analysis on Canada. It draws on a combination of qualitative and quantitative analysis to understand how job polarization has manifested itself in the Canadian labour market.**

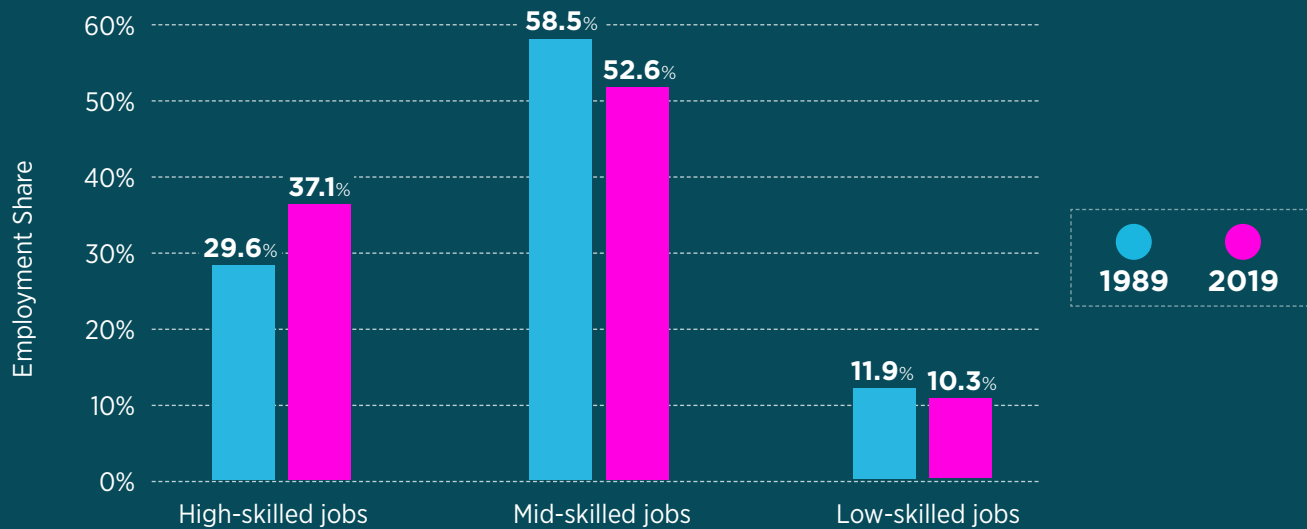
We should start with a brief methodological note. Statistics Canada breaks down Canada's labour market into 40 major occupations, which are classified based on skill type and skill level required to enter and perform in the occupation. We have been able to categorize them into three groups — low-, mid- and high-skilled jobs — based on similar research published by other scholars. (Please see the appendix for further discussion on the approach used.)

Statistics Canada's annual Labour Force Survey data reports employment for each of the 40 major occupations. This enables us to observe employment trends in these occupations and overall patterns across the three skills groups over time at national and provincial levels. (Statistics Canada's disaggregated occupational data do not permit similar analysis for the three territories.)

What does this research tell us?

Canada has not escaped the job polarization phenomenon. In the three decades since 1989, the share of mid-skilled jobs in Canada shrank from 58.5 percent to 52.6 percent. Unlike in other countries, however, the share of low-skilled jobs did not increase. In fact, the share declined by 1.6 percentage points in the three decades (see Figure 2).

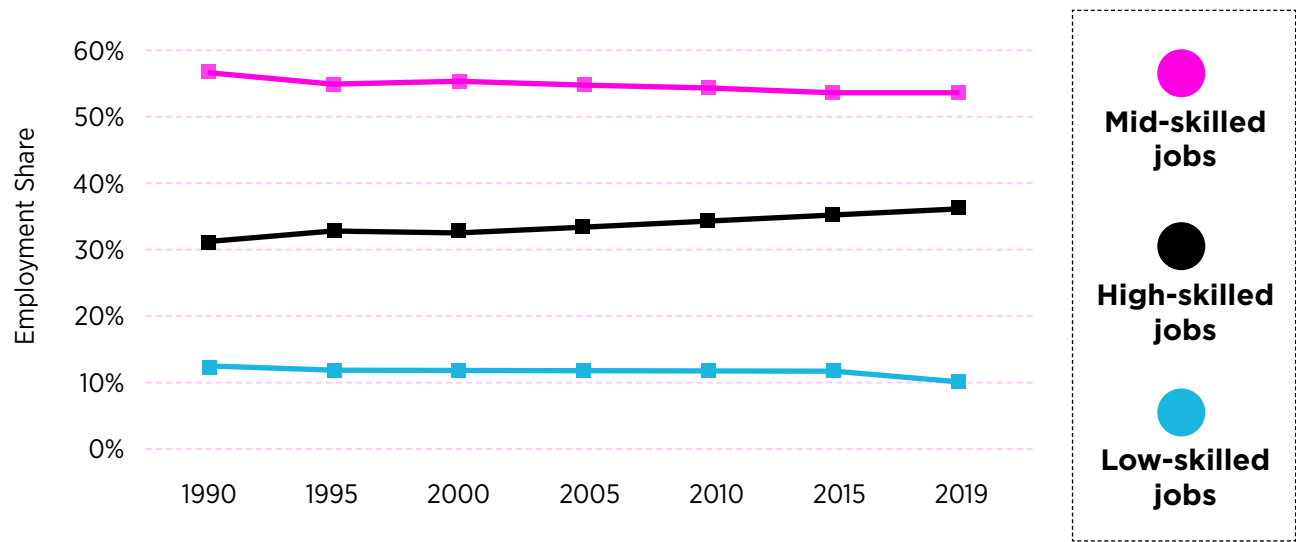
**FIGURE 2: EMPLOYMENT SHARE BY SKILL LEVEL, CANADA, BOTH SEXES, 1989 AND 2019**



**Source:** Authors' calculations based on employment data from Statistics Canada. (2020). Table 14-10-0335-01 Labour force characteristics by occupation, annual.

This is worth emphasizing: Canada's job polarization has not produced a U-shaped economy per se, but rather it has involved a 7.5-percentage-point increase in high-skilled occupations and accompanying declines in both mid- and low-skilled jobs. It has, in effect, seen a relative demand shift favouring high-skilled workers and an accompanying drop in demand for those at the middle and bottom of the skills distribution.

Another way to think of it is this: the data show that while there has been a continuous decline in the share of mid-skilled jobs and a steady increase in high-skilled jobs since 1990, the share of low-skilled employment was basically flat after 2000, averaging at 10.8 percent in subsequent years (see Figure 3). The Canadian experience may therefore be best described as a J-shaped economy.

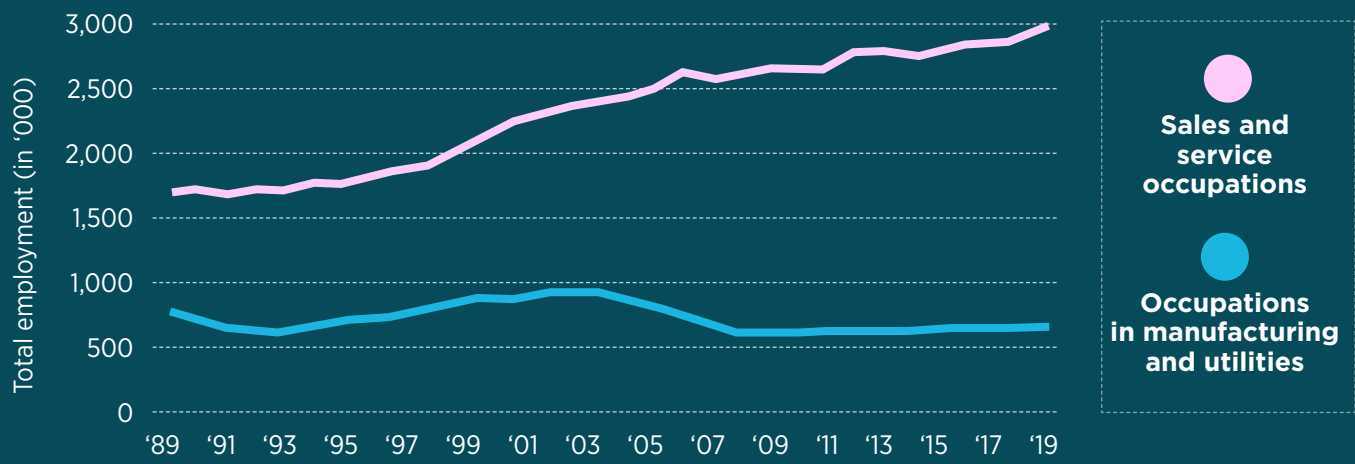
**FIGURE 3: EMPLOYMENT SHARE BY SKILL LEVEL, CANADA, 1990 TO 2019**

**Source:** Authors' calculations based on employment data from Statistics Canada. (2020). Table 14-10-0335-01 Labour force characteristics by occupation, annual.

Importantly, however, these aggregate figures obscure significant heterogeneity within the different skills groups. Thus, while they help us to understand the overall story, there is a risk that we miss sectoral or occupational dimensions of these broader trends. Put differently: while the data show a general trend in the direction of fewer mid-skilled jobs, some occupations are more affected than others.

Figure 4 shows the diverging trend for mid-skilled jobs for two occupations. Sales and services are now the largest occupational groups among mid-skilled employment. In the three decades since 1989, the sales and services occupations have experienced a rapid increase in mid-skilled jobs creation while manufacturing and utilities occupations (which have historically been major sources of mid-skilled employment) have created fewer jobs and have, in fact, shed mid-skilled jobs. The number of mid-skilled jobs in manufacturing and utilities occupations has declined by 15 percent since 1989, while it increased by 71 percent in sales and services occupations over the same period.

**FIGURE 4: CHANGES IN MID-SKILLED EMPLOYMENT IN SALES AND SERVICES OCCUPATIONS AND MANUFACTURING AND UTILITIES, 1989 TO 2019**



**Source:** Authors' calculations based on employment data from Statistics Canada. (2020). Table 14-10-0335-01 Labour force characteristics by occupation, annual.

The key point here is that while, in overall terms, the Canadian labour market has experienced job polarization, the changes within and across industries have differed. Some occupations have grown and others have shrunk but the overall trend has been in a J-shaped direction.

This finding is consistent with a broader body of research on job polarization in Canada. A 2020 OECD study, for instance, found that Canada's relative decline of mid-skilled jobs between 1998 and 2018 was smaller than in OECD countries as a whole and smaller than in the U.S. or U.K.<sup>51</sup> A major 2015 study by economists David Green and Benjamin Sands attributed Canada's relatively more stable performance to the resource boom in the early 2000s which acted as an "employment alternative to low-skilled service jobs."<sup>52</sup> The basic insight is that the oil and gas sector's demand for mid-skilled workers partly offset the decline of mid-skilled opportunities elsewhere in the economy. This further reinforces that job polarization affects different industries, regions and people in different ways.





# 3 WHO ARE THE PEOPLE AND PLACES AFFECTED BY JOB POLARIZATION IN CANADA?

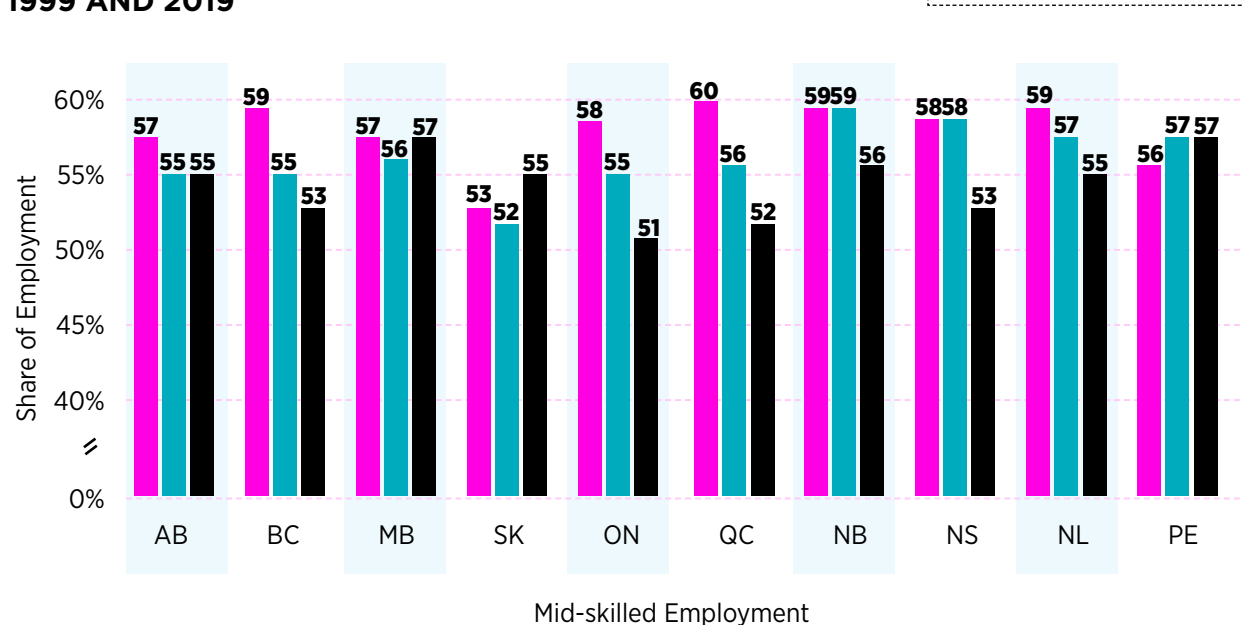
It is important to disaggregate the data to understand who and what regions and places are most affected by the trend of job polarization.

## REGIONAL IMPACT

Although the national share of mid-skilled jobs fell by six percentage points between 1989 and 2019, there was variation across provinces. Manitoba, Saskatchewan and Prince Edward Island, for instance, saw a small increase in the share of their mid-skilled jobs over this period. The rest of the provinces experienced declines in the share of their mid-skilled occupations. The most significant declines were in Ontario and Quebec, which each saw its share of mid-skilled jobs fall by more than 7.5 percentage points. This was followed by a decline of six and five percentage points in British Columbia and Nova Scotia respectively (see Figure 5).

It is difficult to fully understand what has caused some regions to experience more or less job polarization during this period, but these patterns may be attributable to differences in local economies and labour forces, as well as differences in provincial policy frameworks and their diverse impacts. While trends described at the national level are meaningful, understanding provincial and local differences is key to crafting effective policy responses.

**FIGURE 5: CHANGES IN MID-SKILLED EMPLOYMENT (AS A SHARE OF TOTAL EMPLOYMENT), BY PROVINCE, 1989, 1999 AND 2019**



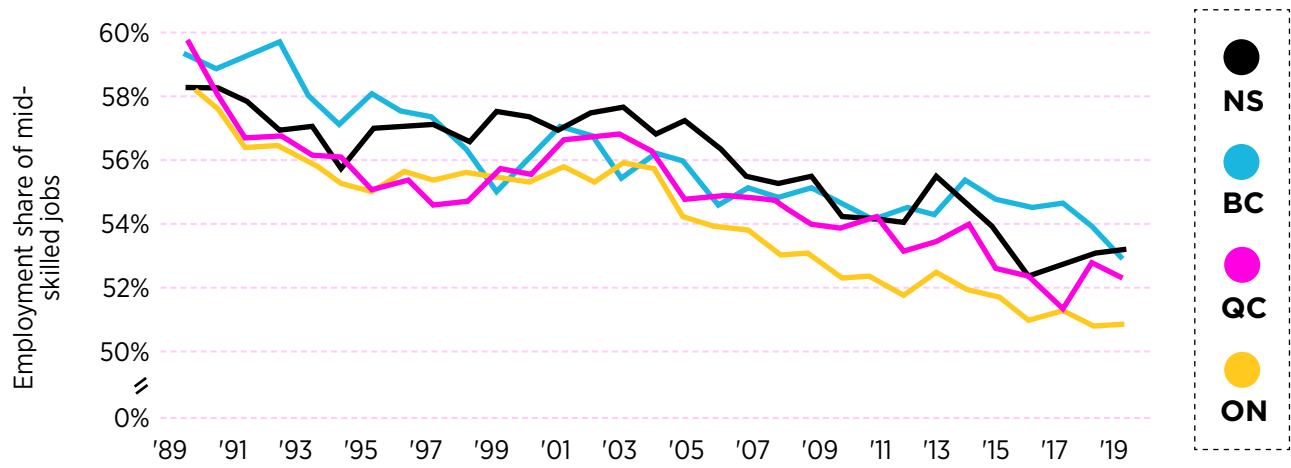
**Source:** Authors' calculations based on employment data from Statistics Canada. (2020). Table 14-10-0335-01 Labour force characteristics by occupation, annual.

We can further explore the dynamics for the four provinces that experienced a decline of more than five percentage points in the share of mid-skilled jobs. Figures 6, 7 and 8 show the employment trend for the three skill groups in Ontario, Quebec, British Columbia and Nova Scotia. In all the four provinces, there is a sharp decline in the share of mid-skilled jobs in the 1990s, a stabilization in the early 2000s and further decline after 2007 following the financial crisis.

This finding is consistent with other research that shows that the 2008-09 recession accelerated a pre-existing decline in manufacturing jobs in Canada in general and in Ontario and Quebec in particular.<sup>iv</sup> It is intuitive therefore that these provinces have experienced the most significant decline in the relative share of mid-skilled jobs across the country. They have been at the forefront of the transition from a goods-producing economy to the service-based economy and its accompanying implications for labour-market demand.<sup>iv</sup>

iv As an example: Ontario and Quebec lost a combined 430,000 manufacturing jobs between 2001 and 2019 alone. This has been a big part of their respective experiences with job polarization. Statistics Canada. (2021). Employment by industry, annual, provinces and economic regions (x 1,000). Table: 14-10-00092-01. <https://www150.statcan.gc.ca/t1/tbl1/en/tv.action?pid=1410009201>.

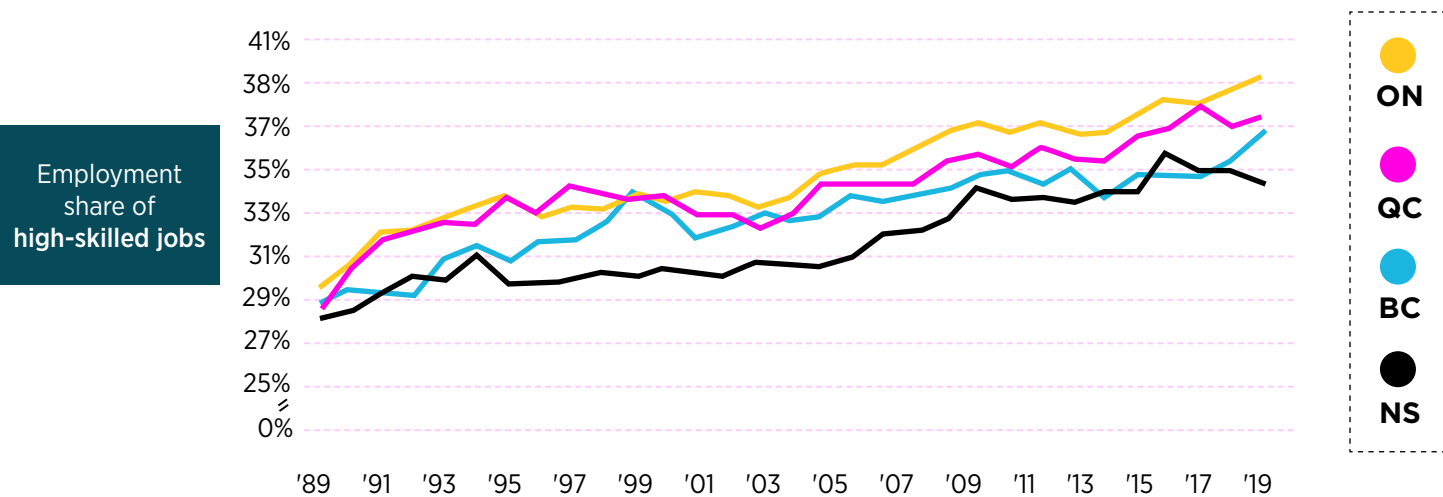
**FIGURE 6: CHANGES IN MID-SKILLED EMPLOYMENT (AS A SHARE OF TOTAL EMPLOYMENT), ONTARIO, QUEBEC, BRITISH COLUMBIA AND NOVA SCOTIA, 1989 TO 2019**



**Source:** Authors' calculations based on employment data from Statistics Canada. (2020). Table 14-10-0335-01 Labour force characteristics by occupation, annual.

Ontario, Quebec and British Columbia saw major increases in the relative share of high-skilled jobs over this period. The increase in high-skilled employment was most significant in Ontario, which witnessed a 10 percentage-point change. But other provinces similarly saw relative increases in high-skilled jobs that were at least six percentage points or more. It is worth observing that these provincial distributions of high-skilled employment may reflect broader trends in the concentration of employment growth in general and high-skilled jobs in particular, in major urban centres such as Toronto, Montreal and Vancouver.<sup>54</sup> This is consistent with Canadian research that finds that income inequality is predominantly an urban phenomenon.<sup>55</sup>

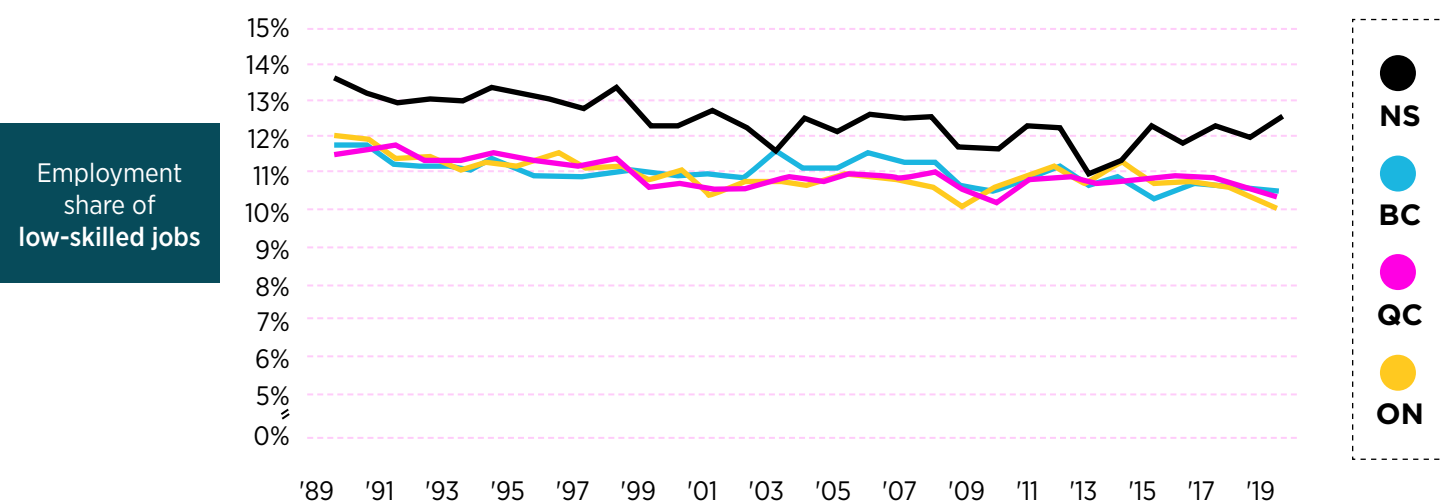
**FIGURE 7: CHANGES IN HIGH-SKILLED EMPLOYMENT (AS A SHARE OF TOTAL EMPLOYMENT), ONTARIO, QUEBEC, BRITISH COLUMBIA AND NOVA SCOTIA, 1989 TO 2019**



**Source:** Authors' calculations based on employment data from Statistics Canada. (2020). [Table 14-10-0335-01 Labour force characteristics by occupation, annual.](#)

The low-skilled jobs picture is a bit different among these provinces. Ontario, Quebec and British Columbia have generally experienced steady declines in their share of low-skilled employment. Nova Scotia was on similar trajectory, but the share of low-skilled employment picked up after 2013.

**FIGURE 8: CHANGES IN LOW-SKILLED EMPLOYMENT (AS A SHARE OF TOTAL EMPLOYMENT), ONTARIO, QUEBEC, BRITISH COLUMBIA AND NOVA SCOTIA, 1989 TO 2019**



**Source:** Authors' calculations based on employment data from Statistics Canada. (2020). [Table 14-10-0335-01 Labour force characteristics by occupation, annual.](#)

## IMPACT ON DIFFERENT POPULATIONS

Understanding how these trends affect different populations is crucial for developing proper policy responses. Although, as we outline below, there are significant data limitations that currently impede our ability to understand the impact on different populations, we have sought to draw on the data that are available to assess how job polarization has affected men and women, immigrants and younger workers.

There is currently only a small gender difference in the share of employment by skill group, with a higher share of women than men in the low-skilled and high-skilled jobs. This represents a significant change over the past three decades in which women have gone from being less represented than men in high-skilled occupations to more represented (Table 2). Female employment in high-skilled jobs increased by more than 10 percentage points between 1989 and 2019, while the increase in male employment in high-skilled jobs was half of that.

**TABLE 2: EMPLOYMENT SHARE BY SKILL LEVEL, CANADA, MALES AND FEMALES, 1989, 1999, 2009 AND 2019**

	Employment share in low-skilled jobs		Employment share in mid-skilled jobs		Employment share in high-skilled jobs	
	Male	Female	Male	Female	Male	Female
1989	11.4%	12.5%	57.1%	60.2%	31.5%	27.3%
1999	10.2%	12.0%	54.9%	56.0%	34.9%	32.0%
2009	9.7%	11.4%	54.4%	54.2%	35.9%	34.5%
2019	10.0%	10.6%	53.4%	51.7%	36.6%	37.7%

**Source:** Authors' calculations based on employment data from Statistics Canada. (2020). Table 14-10-0335-01 Labour force characteristics by occupation, annual.

Extending this type of analysis to different populations is limited by data availability. The occupational distribution from the Labour Force Survey tracks monthly and annual changes in employment levels across the 40 major occupations. Although it provides gender disaggregated figures, the publicly available data do not disaggregate by other demographic characteristics that would help us to understand the experiences of immigrants, racialized Canadians, Indigenous people or younger workers. This represents a major impediment for scholars and policymakers to understand how different populations are affected by these trends.

In an attempt to overcome this obstacle, we turned to recent census data (2016). It does not give us a longitudinal sense of how the employment share has changed among these population

groups, but it does permit an understanding of the job distribution of different groups at a particular moment in time.

Take immigrants for instance. According to the recent census, immigrants are more likely than non-immigrants to engage in high-skilled employment while the share of low-skilled employment is similar for immigrants and non-immigrants. But this gap seems to be driven by a higher share of established immigrants engaging in high-skilled jobs. The share of low-skilled employment for recent immigrants is double that of immigrants who arrived before 1981. Similarly, recent immigrants are less likely than non-immigrants to engage in both high-skilled employment and mid-skilled employment resulting in a higher share in low-skilled employment. Additionally, a higher proportion of non-permanent residents work in low-skilled employment compared to non-immigrants as well as established immigrants, but they also have a higher share of high-skilled employment than non-immigrants (see Table 3).

**TABLE 3: EMPLOYMENT SHARE BY SKILL LEVEL, CANADA, IMMIGRATION STATUS, 2016 CENSUS**

Immigrant Status	Low-skilled	Mid-skilled	High-skilled
Non-immigrants	13%	59%	28%
Immigrants	13%	56%	30%
Immigrated before 1981	9%	56%	35%
Recent immigrants (2011 to 2016)	19%	55%	26%
Non-permanent residents	16%	53%	32%

**Source:** Authors' calculations based on Statistics Canada. (2018). 2016 census of population Table: 98-400-X2016272.

It is beyond the scope of this report, but it would be useful to understand how issues such as foreign credential recognition, social capital and systemic racism influence where on the skills distribution immigrants find themselves and how this has changed over time. Given that immigration will account for the vast majority of labour-market growth over the coming 25 years, understanding the influence and impact of these factors will be critical to ensuring that immigrants are able to maximize the return on the skills they possess.<sup>56, 57, 58</sup> Failing to fully utilize the human capital of new Canadians does not just produce opportunity costs for them and their families, but represents a huge missed opportunity for the national economy.

Census data also show differences across age groups. Younger workers are more likely to be engaged in low-skilled jobs with roughly one in three workers between the ages of 15 and 24



engaged in low-skilled jobs.<sup>v</sup> While some of this finding may be explained by younger workers combining part-time jobs with post-secondary education, it is also possible that a significant share of these workers may be locked into low-skill jobs by a combination of low levels of human capital, systemic barriers and the broader trend of job polarization. As mentioned earlier, some studies suggest that job polarization is not primarily a function of mid-skilled workers losing their jobs mid-career, but rather is reflected in the types of occupations in which new workers are finding themselves.<sup>59</sup>

**TABLE 4: EMPLOYMENT SHARE BY SKILL LEVEL, CANADA, AGE GROUP, 2016 CENSUS**

	Age group		
	15 to 24	25 to 64	65 years and over
High-skilled	18%	45%	44%
Mid-skilled	51%	47%	46%
Low-skilled	31%	9%	10%
Total	100%	100%	100%

**Source:** Authors' calculations based on Statistics Canada. (2018). 2016 census of population Table: 98-400-X2016258.

The key takeaway from this analysis is that while there does seem to be evidence of differing effects of job polarization on different population groups, data limitations impede our ability to better understand these effects for racialized Canadians, Indigenous people, disabled Canadians, and younger workers. It is critical, therefore, that Statistics Canada expand its data collection and analysis to permit scholars and policymakers to be able to disaggregate Canada's labour-market data in order to better understand how job polarization manifests among different populations and individual characteristics.

Overall, according to the data and evidence that are available, it seems clear that, while Canada is indeed experiencing job polarization, how it manifests itself is complicated. Polarization is more pronounced in some industries than in others, in some provinces than in others, and even among different populations within Canada, such as recent immigrants.

<sup>v</sup> Note this calculation is based on occupation type reported by the respondent in the census survey.

# 4 WHY DOES THIS MATTER?

Thus far, we have sought to understand the trend of job polarization, its causes and how it manifests in Canada and across advanced economies. The relative decline of mid-skilled jobs is something that needs to be closer to the centre of debate with regards to future labour-market developments and the role of public policy. At minimum, it ought to be attracting more attention in the world of politics and policy.

Currently, we spend much of our time and attention debating the symptoms (including income and wage inequality) and the causes (including automation and globalization) of job polarization. But this debate is severely hampered by a lack of precision when it comes to the concept of job polarization itself and what it means for Canadian workers.

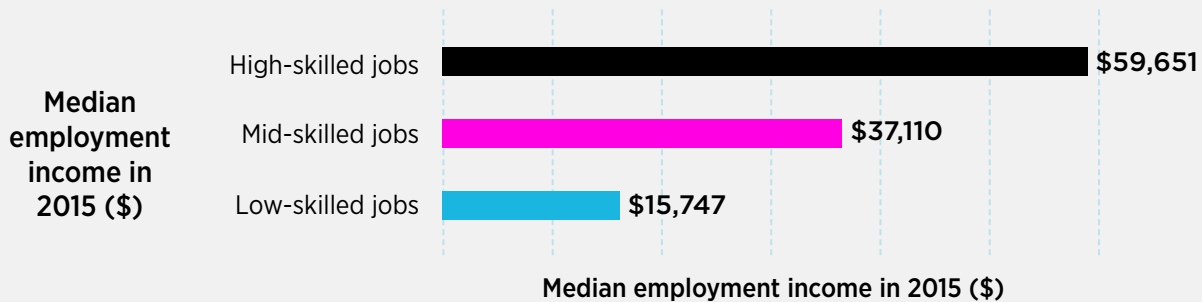
In the past, the goods-producing economy that largely defined the advanced economies of the 20th century had significant demand for mid-skilled workers, which in turn produced a lot of jobs that provided a middle-class standard of living.<sup>60</sup> Consequently, the median worker could generally find stable and reasonably well-paying employment. Think of the autoworker in Oshawa or the millworker in the Saguenay. These jobs, which typically required only a high-school diploma, historically sustained families and communities.

The changes to the distribution of jobs outlined above are therefore a major economic, social and political development. They mean there is less demand for the median worker in the modern economy. Some of these workers will respond by climbing the skills ladder into high-skilled occupations. But many others will fall into lower-skilled jobs with less job security and lower pay. The consequences could be significant. As economists David Green and Benjamin Sand have put it: “The loss of good jobs with wages that could provide financial security for less-educated workers raises the spectre of an increasingly unequal society.”<sup>61</sup>

The result could be higher rates of inequality in general and among certain population groups in particular. We know from past experience that Canada’s economy is already stratified along different demographic and identity characteristics. An ongoing decline in the relative share of mid-skilled employment will likely exacerbate these trends by disproportionately impacting those already in lower-wage jobs and with higher levels of employment precarity, including women, persons with disabilities, Indigenous people, new immigrants and members of other equity-seeking groups.<sup>62,63,64,65</sup>

There is certainly evidence of existing income and wage disparities across these skill groups. Analysis of data from the 2016 census shows that individuals who are employed in high-skilled jobs earn almost four times the income earned by individuals working in low-skilled jobs (see Figure 9). As mid-skilled jobs shrink, it is not unreasonable to expect that the income gap among Canadian workers will expand in response.

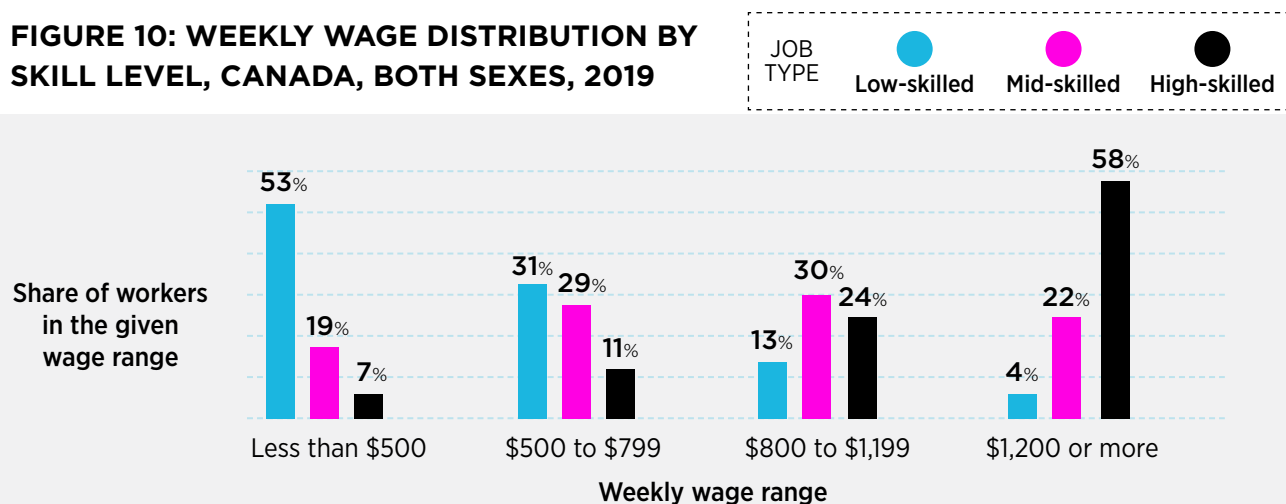
**FIGURE 9: MEDIAN EMPLOYMENT INCOME BY SKILL LEVEL, CANADA, BOTH SEXES, 2015**



**Source:** Authors' calculations based on Statistics Canada. (2018). 2016 census of population Table: 98-400-X2016357

Another way to look at the skills-based income gap is to compare weekly earnings. More than half of employees in low-skilled jobs earn less than \$500 per week, while approximately 60 percent of employees in high-skilled jobs earn more than double that amount (\$1,200 or more). While some low-skilled jobs such as trade helpers and construction labourers pay competitive wages, low-skilled jobs overall cluster at the lower end of the wage distribution and high-skilled jobs at the opposite end. As mid-skilled jobs shrink and more workers go up and down the skills ladder, we will likely see growing earnings gaps among workers (see Figure 10).

**FIGURE 10: WEEKLY WAGE DISTRIBUTION BY SKILL LEVEL, CANADA, BOTH SEXES, 2019**



**Source:** Authors' calculations based on wage data from Statistics Canada. (2020). Table 14-10-0316-01 Weekly wage distributions by occupation, annual (x 1,000).

## 5 WHAT CAN POLICYMAKERS DO ABOUT IT?

**It is beyond the scope of this report to outline a comprehensive policy agenda in response to job polarization although other work by the Diversity Institute and Public Policy Forum explores these issues in more detail. Further work in this area will need to consider the relationship between job polarization and income inequality and how anti-inequality policies need to go beyond post-market redistribution to tackle the root causes inherent in these broader labour-market trends.**

It is important that such an agenda is not nostalgic. The job polarization problem will not be solved by restoring the old types of mid-skilled occupations. Former U.S. President Donald Trump's promise to bring back coal mining, for instance, may have an appeal for disaffected mid-skilled workers. It is not, however, a sustainable solution to this decades-long process.<sup>66</sup>

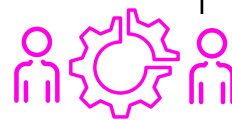
Remember that manufacturing job losses are responsible for only about 40 percent of overall job polarization. Moreover, manufacturing output is much higher than it used to be. In other words, the industry is producing more with fewer workers because of technology-driven productivity gains.<sup>67</sup> The sector is not going to return to previous levels of labour demand. Or at least it will not produce the same types of jobs as it did in the middle of the last century. The jobs that it does produce are likely to be increasingly highly skilled and specialized.

It will thus be necessary for policymakers to think about how to generate a new generation of middle-class opportunities, something that will necessarily involve transforming today's low-skilled jobs into tomorrow's mid-skilled occupations.<sup>68</sup> A big part of this will necessarily involve policies to pull low-skilled workers up the skills ladder through a combination of education, training, labour standards modernization and productivity-enhancing investments.

One might think of such an agenda as having two separate yet related streams. The first is about helping people obtain employment that is commensurate with their credentials and skills. Underemployment not only represents lost productivity potential for the economy, but it also means that individuals are not fully leveraging their human capital. This is a huge opportunity cost for individuals, their families and the economy as a whole.

There is a role for public policy to help close the gap between people's credentials and skills and the market's recognition of them. This will need to come in various policy forms including (but not

**“ There is a role for public policy to help close the gap between people’s credentials and skills and the market’s recognition of them.**



limited to) ongoing work to improve foreign-credential recognition, reforms to labour standards to address systemic barriers (such as proposals like “ban the box” to help those with criminal records overcome hiring discrimination<sup>69</sup>) and reflect new and evolving forms of work and the expansion of childcare options and other care supports for working families. Both Public Policy Forum and the Diversity Institute have produced extensive research on these topics.

But it will also require greater buy-in from employers. The solutions are not just about “fixing” job-seekers. Employers must also recognize the extent to which they contribute to barriers to internationally educated professionals and others who find themselves undervalued or underemployed in the labour market.<sup>70, 71</sup> This is where new common frameworks for assessing, developing and utilizing skills represent a highly-valuable policy innovation.<sup>72</sup> Competency frameworks can help to systemize both the supply and demand side of the labour market and in so doing help to reduce the incidence of underemployment.

The second stream is about pulling low-skilled occupations and workers up the skills distribution. Building a new middle-class economy is crucial for increasing wages and living standards. But, as discussed earlier, it will necessarily look different than the traditional sources of middle-class jobs. Such a policy agenda ought to be viewed as transforming current and future low-skilled occupations into mid- or high-skilled ones as opposed to trying to bring back manufacturing and other forms of traditional mid-skilled employment.

Public policies to support these objectives will come in various forms including support for productivity-enhancing technologies,<sup>73</sup> investments in digital skills,<sup>74</sup> new labour standards and forms of professionalization to boost low-skilled occupations,<sup>75</sup> and even wage subsidies to boost the market incomes of low-skilled workers.<sup>76</sup> Investments in areas such as low-skilled workers and digital skills need to take place with awareness that there are key differences within the Canadian population. Research shows, for instance, that women tend to have weaker digital skills than men and are at a higher risk of being replaced by automation.<sup>77, 78</sup> There are also some segments of the population that are more prone for many reasons to becoming trapped in low-skilled, low-wage

occupations without opportunities for advancement.<sup>79, 80</sup> Policies and investments must be well targeted and feature user-centred design to ensure return on investment and ultimate success across diverse populations.

A big part of such an agenda will need to involve building a better policy framework around those Canadians who do not pursue conventional post-secondary education. There remains a persistent share of the population — approximately one third of working-age Canadians — who do not have post-secondary qualifications.<sup>81</sup> This cohort will face significant challenges in a labour market that is increasingly bifurcated along the lines of credentials and skills. Public policy must be oriented toward helping these Canadians acquire skills, build attachments to the labour market and continue to bolster their productivity through lifelong learning.

Such a policy agenda might involve, among other things, an expansion of high school-based vocational education,<sup>82</sup> innovative models for demand-side training<sup>83</sup> and different forms of micro-credentialing to help workers keep up with new and evolving labour-market demands.<sup>84</sup> Fundamentally, though, it requires a recognition on the part of policymakers that our society experiences the same collective benefits in helping those without post-secondary qualifications establish strong attachments to the labour force as it does in helping people pursue post-secondary education.

This list of possible policy tools and levers is not exhaustive. Ongoing and future work by PPF and Diversity Institute will consider how public policy can be more responsive to the pattern of job polarization that predated the pandemic and is bound to continue in its aftermath. The key here is to set out these different streams of policy in order to give policymakers a framework for thinking about how to address job polarization in the future.



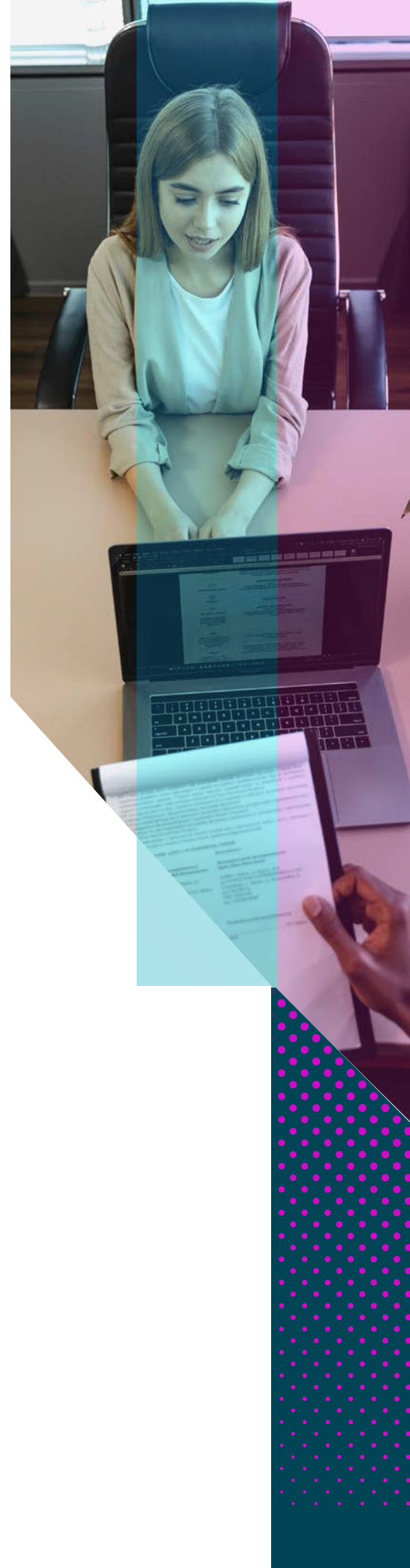
**Research shows that women tend to have weaker digital skills than men and are at a higher risk of being replaced by automation.**

**Source:** Frenette, M., and Frank, K. (2020). Automation and the Sexes: Is Job Transformation More Likely Among Women? Statistics Canada.  
Saba, T., Cafley, J., Davey, K., Sitnik, V., Latif, R., and Blanchette, S. (2020). Economic Equality in a Changing world: Removing Barriers to Employment for Women. Public Policy Forum, Diversity Institute, Future Skills Centre.

## CONCLUSION

The immediate priority, however, is for policymakers to give greater attention to job polarization as part of their thinking with regards to post-pandemic planning. There is reason to believe that many of the trends above are likely to be exacerbated by the pandemic. The risk, of course, is that an acceleration of job polarization results in millions of workers who are unemployed or underemployed, which can ultimately have significant economic, social and political consequences.

If “build back better” is to be more than a slogan, it will need to confront these questions about job polarization. Our hope is that this report will help to facilitate such a discussion and debate about these trends, what they mean for the Canadian economy and society, and what, if any, role there is for public policy to address them.



# APPENDIX

## Methods note

- Data source: Our main source of data is the annual Labour Force Survey produced by Statistics Canada. In addition, we use the 2016 census data to analyze job-polarization by immigration status and to report the earning differential by skill level.
- We use the two-digit National Occupation Code (NOC) classification as a basis for grouping employment into high-skilled, mid-skilled and low-skilled.
- We group all the 40 occupations into the three skill groups.
- **High-skilled jobs include:**
  - Management occupations
  - Professional occupations: usually requiring a university degree
  - Technical occupations with Skill level B
- **Mid-skilled jobs include:**
  - All skill level B occupations, excluding technical occupations. These occupations usually require college or two to five years of apprenticeship training
  - All skill level C occupations. These occupations usually require high school with short training or job-specific training
- **Low-skilled jobs include:**
  - Skill level D occupations. These occupations have short on the job training or have no formal education requirements.



# ENDNOTES

- 1 Lake, J. (2018). Don't blame trade for killing the middle-tier jobs we need. George W. Bush Institute. <https://www.bushcenter.org/catalyst/opportunity-road/lake-job-polarization.html>
- 2 Speer, S. and Dijkema, B. (Dec. 2, 2020). Fuelling Canada's middle class: Job polarization and the natural resource sector. Cardus. <https://www.cardus.ca/research/work-economics/reports/fuelling-canadas-middle-class/>
- 3 Ng, E.S. and Gagnon, S. (January 2020). Employment gaps and underemployment for racialized groups and immigrants. Public Policy Forum, Diversity Institute, Future Skills Centre. <https://ppforum.ca/publications/underemployment-for-racialized-groups-and-immigrants-in-canada/>
- 4 Foster, K. (October 2012). Youth employment and un(der)employment in Canada: More than a temporary problem? Behind the Numbers. Canadian Centre for Policy Alternatives. <http://www.policyalternatives.ca/sites/default/files/uploads/publications/National%20Office/2012/10/Youth%20Unemployment.pdf>
- 5 The Telegraph. (Nov. 14, 2016). Thousands of working women forced into low paid, low skilled jobs after returning from career break. The Telegraph. <https://www.telegraph.co.uk/women/life/thousands-of-working-women-forced-into-low-paid-low-skilled-jobs/>
- 6 See for instance Valletta, R. (January 2015). Higher education, wages and polarization. FRBSF Economic Letter, Federal Reserve Bank of San Francisco. <https://www.frbsf.org/economic-research/files/el2015-02.pdf>
- 7 See for instance Autor, D.H. (2010). The polarization of the U.S. labor market: Evidence, explanations and implications for higher education. Forum Futures. Forum for the Future of Higher Education. <http://forum.mit.edu/wp-content/uploads/2017/05/FF10PolarizationUS.pdf>
- 8 See for instance Autor, D. H., and Dorn, D. (July 2009). Inequality and specialization: The growth of low-skill service jobs in the United States. Institute for the Study of Labour (IZA). <http://ftp.iza.org/dp4290.pdf>
- 9 Deng, Z., Morissette, R. and Messacar, D. (2020). Running the economy remotely: Potential for working from home during and after COVID-19. Statistics Canada. <https://www150.statcan.gc.ca/n1/pub/45-28-0001/2020001/article/00026-eng.htm>
- 10 Statistics Canada. (2020). Labour Force Survey, April 2020. <https://www150.statcan.gc.ca/n1/daily-quotidien/200508/dq200508a-eng.htm>
- 11 See for instance Cowen, T. (Feb. 16, 2017). Industrial revolution comparisons aren't comforting. Bloomberg. <https://www.bloomberg.com/opinion/articles/2017-02-16/industrial-revolution-comparisons-aren-t-comforting>
- 12 Buyst, E., Goos, M. and Salomons, A. (2018). Job polarization: An historical perspective. Oxford Review of Economic Policy, 34(3): 461-474. <https://academic.oup.com/oxrep/article-abstract/34/3/461/5047379?redirectedFrom=fulltext>
- 13 Canon, M. E. and Marifian, E. A. (January 1, 2013). Job polarization leaves middle-skilled workers out in the cold. Federal Reserve Bank of St Louis. <https://www.stlouisfed.org/publications/regional-economist/january-2013/job-polarization-leaves-middleskilled-workers-out-in-the-cold>
- 14 Bohm, M. (February 8, 2014). Job polarisation and the decline of middle-class workers' wage. VoxEU. <https://voxeu.org/article/job-polarisation-and-decline-middle-class-workers-wages>
- 15 Bohm, M. (2020). The causes and consequences of job polarization and their future perspectives (in "Work in the age of data"). OpenMind BBVA. <https://www.bbvaopenmind.com/en/articles/causes-and-consequences-of-job-polarization-and-their-future-perspectives/>
- 16 Goos, M. and Manning, A. (2007). Lousy and lovely jobs: The rising polarization of work in Britain. The Review of Economics and Statistics, 89(1): 118-133. <https://www.mitpressjournals.org/doi/10.1162/rest.89.1.118>
- 17 Acemoglu, D. and Restrepo, P. (2020). Robots and jobs: Evidence from the US labour market. Journal of Political Economy, 128(6): 2188-2244. <http://www.journals.uchicago.edu/doi/abs/10.1086/705716>
- 18 Autor, D. (2015). Why are there still so many jobs? The history and future of workplace automation. The Journal of Economic Perspectives 29(3): 3-30. <https://economics.mit.edu/files/11563>
- 19 Autor, D. and Dorn, D. (2013). The growth of low-skill service jobs and the polarization of the US labour market. The American Economic Review, 103(5): 1553-1597. <http://www.aeaweb.org/articles?id=10.1257/aer.103.5.1553>

- 20 Jaimovich, N. and Siu, H. (2019). How automation and other forms of IT effect the middle class: Assessing the estimates. Economic Studies at Brookings. [https://www.brookings.edu/wp-content/uploads/2019/11/Siu-Jaimovich\\_Automation-and-the-middle-class.pdf](https://www.brookings.edu/wp-content/uploads/2019/11/Siu-Jaimovich_Automation-and-the-middle-class.pdf)
- 21 Urban, M. C. and Johal, S. (2020). Understanding the future of skills: Trends and global policy responses. Public Policy Forum, Diversity Institute, Future Skills Centre. <https://fsc-ccf.ca/research/understanding-the-future-of-skills-trends-and-global-policy-responses/>
- 22 Frenette, M. and Frank, K. (2020). Automation and job transformation in Canada: Who's at risk? Statistics Canada. <https://www150.statcan.gc.ca/n1/pub/11f0019m/11f0019m2020011-eng.htm>
- 23 Wyonch, R. (2020). The next wave: Automation and Canada's labour market. C.D. Howe Institute, Diversity Institute, Future Skills Centre. [https://www.cdhowe.org/sites/default/files/attachments/research\\_papers/mixed/Commentary\\_585\\_0.pdf](https://www.cdhowe.org/sites/default/files/attachments/research_papers/mixed/Commentary_585_0.pdf)
- 24 Frenette, M. and Frank, K. (2020). Automation and job transformation in Canada: Who's at risk? Statistics Canada. <https://www150.statcan.gc.ca/n1/pub/11f0019m/11f0019m2020011-eng.htm>
- 25 Gresch, D. (2020). Responding to Automation: How adaptable is Canada's labour market? The Conference Board of Canada. [https://fsc-ccf.ca/wp0ontent/uploads/2020/05/Automation\\_Issue\\_Briefing\\_EN.pdf](https://fsc-ccf.ca/wp0ontent/uploads/2020/05/Automation_Issue_Briefing_EN.pdf)
- 26 Wyonch, R. (2020). The next wave: Automation and Canada's labour market. C.D. Howe Institute, Diversity Institute, Future Skills Centre. [https://www.cdhowe.org/sites/default/files/attachments/research\\_papers/mixed/Commentary\\_585\\_0.pdf](https://www.cdhowe.org/sites/default/files/attachments/research_papers/mixed/Commentary_585_0.pdf)
- 27 Breemersch, K., Damijan, J. and Konings, J. (2017). What drives labour-market polarization in advanced countries? The role of China and technology, *Industrial and Corporate Change*, 28(1): 51-77. <https://academic.oup.com/icc/article-abstract/28/1/51/5299621?redirectedFrom=fulltext>;
- 28 Goos, M., Manning, A. and Salomons, A. (2011). Explaining job polarization: The role of technology, offshoring and institutions. Available at SSRN: <https://ssrn.com/abstract=1983952> or <http://dx.doi.org/10.2139/ssrn.1983952>
- 29 Goos, M., Manning, A., and Salomons, A. (2014). Explaining Job Polarization: Routine-Biased Technological Change and Offshoring. *The American Economic Review*, 104(8), 2509–2526. <http://dx.doi.org/10.1257/aer.104.8.2509>
- 30 Jaimovich, N., & Siu, H. E. (2019). How automation and other forms of IT affect the middle class: Assessing the estimates. Brookfield Institute. <https://www.brookings.edu/research/how-automation-and-other-forms-of-it-affect-the-middle-class-assessing-the-estimates/>
- 31 For a good review of the literature on the relative roles of automation and globalization, see Jaimovich, N. and Siu, H. (2019). How automation and other forms of IT effect the middle class: Assessing the estimates. Economic Studies at Brookings. [https://www.brookings.edu/wp-content/uploads/2019/11/Siu-Jaimovich\\_Automation-and-the-middle-class.pdf](https://www.brookings.edu/wp-content/uploads/2019/11/Siu-Jaimovich_Automation-and-the-middle-class.pdf)
- 32 Bárány, Z. L. and Siegel, C. (2019). Job polarization, structural transformation and biased technological change. *Travail Et Emploi* (157): 25-44. <https://journals.openedition.org/travailemploi/8996>
- 33 Morissette, R. (2020). The impact of the manufacturing decline on local labour markets in Canada. Statistics Canada <https://www150.statcan.gc.ca/n1/en/pub/11f0019m/11f0019m2020003-eng.pdf?st=J9lWNZdO>
- 34 Moffat, M. (forthcoming). The Big Shift: Changes in Canadian Manufacturing Employment (2003 to 2018). Smart Prosperity Institute, The Diversity Institute, Future Skills Centre.
- 35 Canon, M. E. and Marifian, E. A. (Jan. 1, 2013). Job polarization leaves middle-skilled workers out in the cold. Federal Reserve Bank of St. Louis. <https://www.stlouisfed.org/publications/regional-economist/january-2013/job-polarization-leaves-middleskilled-workers-out-in-the-cold>
- 36 Ibid.
- 37 Moffat, M. (forthcoming). The Big Shift: Changes in Canadian Manufacturing Employment (2003 to 2018). Smart Prosperity Institute, The Diversity Institute, Future Skills Centre.
- 38 Organisation for Economic Co-operation and Development (OECD). (2020). Preparing for the Future of Work in Canada. OECD Reviews on Local Job Creation. [https://www.oecd-ilibrary.org/employment/preparing-for-the-future-of-work-in-canada\\_05c1b185-en](https://www.oecd-ilibrary.org/employment/preparing-for-the-future-of-work-in-canada_05c1b185-en)
- 39 Goos, M. and Manning, A. (2007). Lousy and lovely jobs: The rising polarization of work in Britain. *The Review of Economics and Statistics*, 89(1): 118-133. <https://www.mitpressjournals.org/doi/10.1162/rest.89.1.118>

- 40 Organisation for Economic Co-operation and Development (OECD). (2020). Employment Outlook 2020: Worker Security and the COVID-19 Crisis. [https://www.oecd-ilibrary.org/employment/oecd-employment-outlook-2020\\_1686c758-en](https://www.oecd-ilibrary.org/employment/oecd-employment-outlook-2020_1686c758-en)
- 41 Tüzemen, Didem and Willis, J. (2013). The vanishing middle: Job polarization and workers' response to the decline of middle-skill jobs. Federal Reserve Bank of Kansas City. <https://www.kansascityfed.org/documents/7612/13q1Tuzemen-Willis.pdf>
- 42 Cerina, F., Moro, A., and Rendall, M. (May 30, 2018). The role of gender in employment polarisation. VoxEU. [https://voxeu.org/article/role-gender-employment-polarisation#:~:text=A%20gender%20theory%20of%20employment%20polarisation&text=\(2018\)%20we%20show%20that%20the,their%20time%20to%20home%20production.](https://voxeu.org/article/role-gender-employment-polarisation#:~:text=A%20gender%20theory%20of%20employment%20polarisation&text=(2018)%20we%20show%20that%20the,their%20time%20to%20home%20production.)
- 43 Cerina, F., Moro, A., and Rendall, M. (2018). The role of gender in employment polarisation. London School of Economics Centre for Macroeconomics Discussion Paper Series. <http://www.centreformacroeconomics.ac.uk/Discussion-Papers/2017/CFMDP2017-04-Paper.pdf>.
- 44 Dwyer, R. E. (June 2013). The care economy? Gender, economic restructuring and job polarization in the U.S. labour market. American Sociological Review, 78(3): 390–416. <https://journals.sagepub.com/doi/10.1177/0003122413487197>.
- 45 Organisation for Economic Co-operation and Development (OECD). (2020). What is happening to middle-skill workers?. OECD Employment Outlook 2020: Worker Security and the COVID-19 Crisis. <https://doi.org/10.1787/c9d28c24-en>.
- 46 Autor, D. (2010). The polarization of the U.S. labor market: Evidence, explanations and implications for higher education. Forum Futures - Forum for the Future of Higher Education. <http://forum.mit.edu/wp-content/uploads/2017/05/FF10PolarizationUS.pdf>.
- 47 Keller, W and Utar, H. (June 2016). International trade and job polarization: Evidence at the worker-level. National Bureau of Economic Research. Working Paper #22315. [https://www.nber.org/system/files/working\\_papers/w22315/revisions/w22315.rev1.pdf](https://www.nber.org/system/files/working_papers/w22315/revisions/w22315.rev1.pdf)
- 48 Tüzemen, D. and Willis, J. (2013). The vanishing middle: Job polarization and workers' response to the decline of middle-skill jobs. Federal Reserve Bank of Kansas City. <https://www.kansascityfed.org/documents/7612/13q1Tuzemen-Willis.pdf>
- 49 Green, D. and Sand, B. (2015). Has the Canadian labour market polarized? Institute for Research on Public Policy. <https://irpp.org/research-studies/has-the-canadian-labour-market-polarized/>
- 50 Organisation for Economic Co-operation and Development (OECD). (2017). Job polarisation by country: Percentage point change in share of total employment, 1995 to 2015. OECD employment outlook 2017. [https://www.oecd-ilibrary.org/employment/oecd-employment-outlook-2017/job-polarisation-by-country\\_empl\\_outlook-2017-graph39-en](https://www.oecd-ilibrary.org/employment/oecd-employment-outlook-2017/job-polarisation-by-country_empl_outlook-2017-graph39-en)
- 51 Organisation for Economic Co-operation and Development (OECD). (2020). Job polarisation and changing skills needs at the local level in Canada. Preparing for the Future of Work in Canada. <https://doi.org/10.1787/1995180f-en>.
- 52 Green, D. A. and Sand, B. M. (2015). Has the Canadian labour market polarized?, Canadian Journal of Economics, 48(2): 612-646. <https://onlinelibrary.wiley.com/doi/abs/10.1111/caje.12145>
- 53 Moffat, M. (forthcoming). The Big Shift: Changes in Canadian Manufacturing Employment (2003 to 2018). Smart Prosperity Institute, The Diversity Institute, Future Skills Centre.
- 54 Speer, S. and Ahmed, W. (June 2020). A Place-Based Lens to the Future of Work in Canada. Public Policy Forum. <https://ppforum.ca/publications/a-place-based-lens-to-the-future-of-work-in-canada/>
- 55 Fong, F. (July 31, 2017) Rising inequality an urban phenomenon. Policy Options. <https://policyoptions.irpp.org/magazines/july-2017/rising-inequality-urban-phenomenon/>
- 56 Meadow, J. and Sheldrick, O. (2020). Integrating newcomers into Ontario's economy: A strategy for professionally skilled immigrant success. Ontario 360 - Munk School of Global Affairs and Public Policy. <https://on360.ca/policy-papers/integrating-newcomers-into-ontarios-economy-a-strategy-for-professionally-skilled-immigrant-success/>
- 57 Diversity Institute. (2019). Social Mobility of Immigrants to Peel Region: Across the life course. [https://www.ryerson.ca/diversity/reports/social\\_mobility\\_of\\_immigrants\\_to\\_peel\\_region/](https://www.ryerson.ca/diversity/reports/social_mobility_of_immigrants_to_peel_region/)
- 58 Ng, E. S. and Gagnon, S. (2020). Employment gaps and underemployment for racialized groups and immigrants in Canada: Current findings and future directions. Public Policy Forum, Diversity institute, Future Skills Centre. <https://fsc-ccf.ca/research/employment-gaps-and-underemployment-for-racialized-groups-and-immigrants-in-canada/>
- 59 Ibid.

- 60 Organisation for Economic Co-operation and Development (OECD). (2020). Employment Outlook 2020: Worker Security and the COVID-19 Crisis. OECD Employment Outlook 2020. [https://www.oecd-ilibrary.org/employment/oecd-employment-outlook-2020\\_1686c758-en](https://www.oecd-ilibrary.org/employment/oecd-employment-outlook-2020_1686c758-en)
- 61 Green, D. A. and Sand, B. M. (2015). Has the Canadian labour market polarized? Canadian Journal of Economics. 48(2): 612-646. <https://onlinelibrary.wiley.com/doi/abs/10.1111/caje.12145>
- 62 Saba, T., Cafley, J., Davey, K., Sitnik, V., Latif, R., and Blanchette, S. (2020). Economic Equality in a Changing world: Removing Barriers to Employment for Women. Public Policy Forum, Diversity Institute, Future Skills Centre. <https://fsc-ccf.ca/research/economic-equality-in-a-changing-world-removing-barriers-to-employment-for-women/>
- 63 Skudra, M., Avgerinos, A., and McCallum, K. E. (2020). Mapping the landscape: Indigenous skills training and jobs in Canada (Skills Next). Public Policy Forum, Diversity Institute, Future Skills Centre. <https://ppforum.ca/publications/mapping-the-landscape-indigenous-skills-training-and-jobs-in-canada/>
- 64 Tompa, E., Samosh, D., and Boucher, N. (2020). Skills Gaps, underemployment and equity of labour-market opportunities for persons with disabilities in Canada. Public Policy Forum, Diversity Institute, Future Skills Centre. <https://fsc-ccf.ca/research/skills-gaps-underemployment-and-equity-of-labour-market-opportunities-for-persons-with-disabilities-in-canada/>
- 65 Ng, E. S., and Gagnon, S. (2020). Employment Gaps and Underemployment for Racialized Groups and Immigrants in Canada. Public Policy Forum, Diversity Institute, Future Skills Centre. <https://fsc-ccf.ca/research/employment-gaps-and-underemployment-for-racialized-groups-and-immigrants-in-canada/>
- 66 Doyle, C., and Hendrix, S. (Oct. 20, 2020). Trump promised to bring back coal in Appalachia. Here's why that didn't happen. Columbus Dispatch. <https://www.dispatch.com/story/news/environment/2020/10/20/trump-promised-bring-back-coal-appalachia-has-he/5866420002/>.
- 67 Speer, S. and Dijkema, B. (Dec. 2, 2020). Fuelling Canada's middle class: Job polarization and the natural resource sector. Cardus. <https://www.cardus.ca/research/work-economics/reports/fuelling-canadas-middle-class/>
- 68 Nesta. (2017). Six jobs for 2030. <https://www.nesta.org.uk/feature/six-jobs-2030/>
- 69 Strain, M. (April 3, 2019). Think ex-felons should be working? Then give them a chance. Bloomberg. <https://www.bloomberg.com/opinion/articles/2019-04-03/-ban-the-box-laws-for-ex-felons-are-working>
- 70 Tompa, E., Samosh, D. and Boucher, N. (2020). Skills Gaps, Underemployment, and Equity of Labour-Market Opportunities for Persons with Disabilities in Canada. Public Policy Forum, Diversity Institute, Future Skills Centre. <https://ppforum.ca/publications/barriers-to-employment-for-people-with-disabilities-in-canada/>
- 71 Shortt, B., Robson, B. and Sabat, M. (2020). Bridging the Digital Skills Gap: Alternative Pathways. Public Policy Forum, Diversity Institute, Future Skills Centre. <https://ppforum.ca/publications/bridging-the-digital-skills-gap/>
- 72 Gyarmati, D., Lane, J and Murray, S. (November 2020). Competency Frameworks and Canada's Essential Skills. Public Policy Forum, Diversity Institute, Future Skills Centre. <https://ppforum.ca/publications/skills-next-competency-frameworks-and-canadas-essential-skills/>
- 73 Atkinson, R. (Sept. 2020). What's the best way to help low-income workers? Automate low-income jobs. American Compass. <https://americancompass.org/the-commons/whats-the-best-way-to-help-low-income-workers-automate-low-income-jobs/>
- 74 Shortt, D., Robson, B and Sabat, M. (January 2020). Bridging the digital skills divide. Public Policy Forum, Diversity Institute, Future Skills Centre. <https://ppforum.ca/publications/bridging-the-digital-skills-gap/>
- 75 Johal, S. (June 2020). The Future is Now: Creating Decent Work Post-Pandemic. Public Policy Forum. <https://ppforum.ca/publications/the-future-is-now-creating-decent-work-post-pandemic/>
- 76 Speer, S. (Aug. 20, 2020). Reforming Canada's Income Support Framework: The Case for Wage Subsidies. Public Policy Forum. <https://ppforum.ca/publications/reforming-canadas-income-support-framework/>
- 77 Frenette, M., and Frank, K. (2020). Automation and the Sexes: Is Job Transformation More Likely Among Women? Statistics Canada. <https://www150.statcan.gc.ca/n1/pub/11f0019m/11f0019m2020015-eng.htm>
- 78 Saba, T., Cafley, J., Davey, K., Sitnik, V., Latif, R., and Blanchette, S. (2020). Economic Equality in a Changing world: Removing Barriers to Employment for Women. Public Policy Forum, Diversity Institute, Future Skills Centre. <https://fsc-ccf.ca/research/economic-equality-in-a-changing-world-removing-barriers-to-employment-for-women/>

- 79 Canadian Council for Aboriginal Business Research. (2020). Digital Differences: The impact of automation on the Indigenous economy in Canada. Diversity Institute, Future Skills Centre. <https://fsc-ccf.ca/research/digital-differences-the-impact-of-automation-on-the-indigenous-economy-in-canada/>
- 80 Shortt, D., Robson, B., and Sabat, M. (2020). Bridging the Digital Skills Gap: Alternative pathways. Public Policy Forum, Diversity Institute, Future Skills Centre. <https://fsc-ccf.ca/research/bridging-the-digital-skills-gap-alternative-pathways/>
- 81 Speer, S. and Dijkema, B. (December 2020). Fuelling Canada's Middle Class: Job Polarization and the Natural Resource Sector. Cardus. <https://www.cardus.ca/research/work-economics/reports/fuelling-canadas-middle-class/>
- 82 Speer, S. and Dijkema, B. (Feb. 28, 2020). The skilled trades are in need of strengthened apprenticeship programs. Policy Options <https://policyoptions.irpp.org/magazines/february-2020/the-skilled-trades-are-in-need-of-strengthened-apprenticeship-programs/>
- 83 Gupta, A. and Tibando, A.J. (June 2020). Emerging Stronger: Addressing the Skills Under-Utilization Challenge for the Future of Work in Canada. Public Policy Forum. <https://ppforum.ca/publications/emerging-stronger-addressing-the-skills-under-utilization-challenge-for-the-future-of-work-in-canada/>
- 84 Cote, A. and White, A. (Dec. 17, 2020). Higher Education for Lifelong Learners: A Roadmap for Ontario Post-Secondary Leaders and Policymakers. Ontario 360 - Munk School of Global Affairs and Public Policy. <https://on360.ca/policy-papers/higher-education-for-lifelong-learners-a-roadmap-for-ontario-post-secondary-leaders-and-policymakers/>



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