

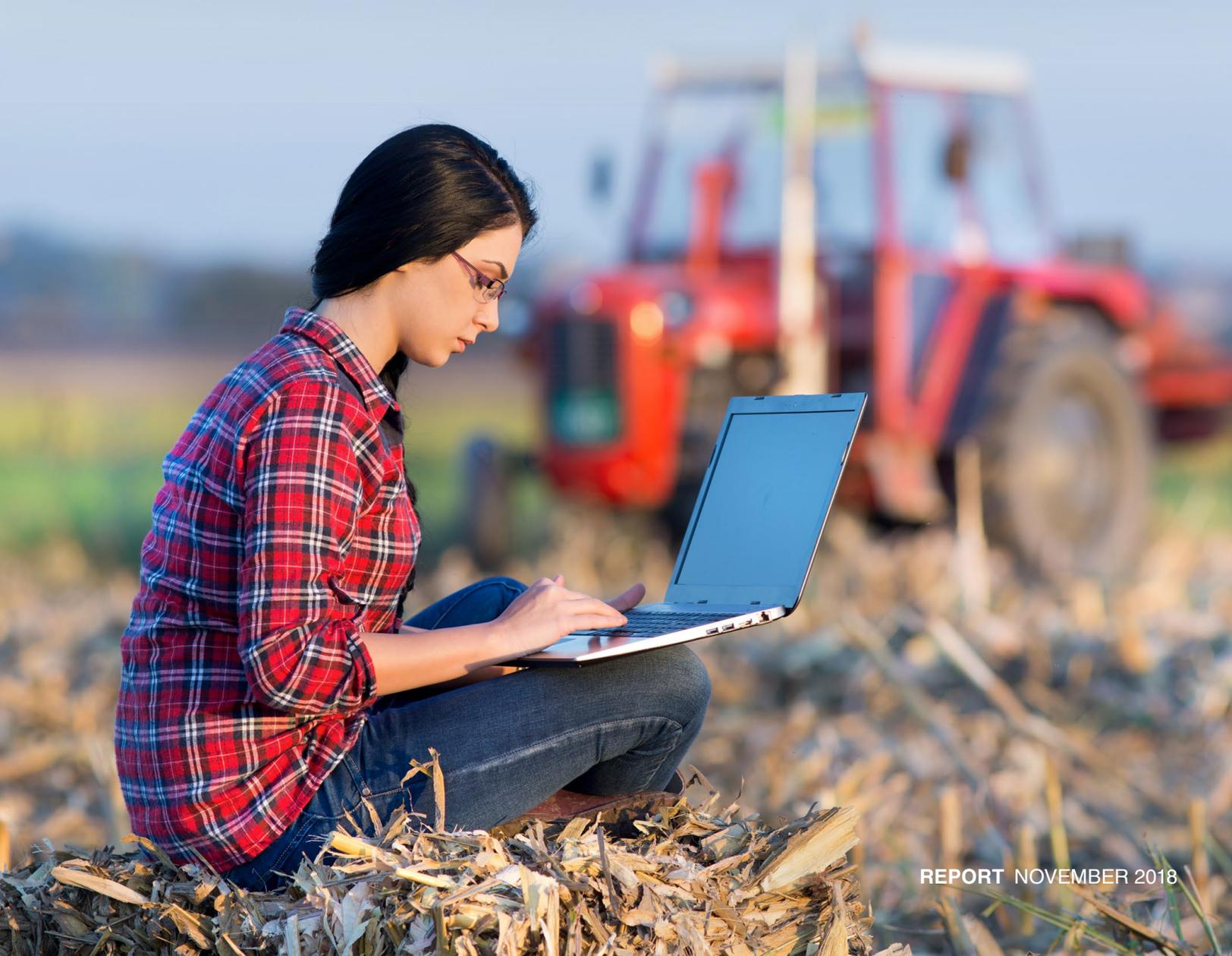


The Conference Board
of Canada

Le Conference Board
du Canada

Building Skills Connections Series.

Alberta in a Nutshell



REPORT NOVEMBER 2018

Building Skills Connections Series: Alberta in a Nutshell

Eleni Kachulis and Matthew McKean

Preface

Alberta is well positioned to thrive amid disruptors like demographic change and rapid technological development, but meeting the demand for skilled workers will be essential to ensuring its long-term prosperity. This report examines the state of skills gaps in Alberta, drawing on relevant literature, current data, and a series of interviews with Alberta employers and labour market experts. The first in a series, it lays the groundwork for in-depth analyses of the skills requirements in seven key sectors of the province's economy, providing a broad overview of skills supply and demand in the province.

To cite this document: Kachulis, Eleni, and McKean, Matthew. *Building Skills Connections Series: Alberta in a Nutshell*. Ottawa: The Conference Board of Canada, 2018.

©2018 The Conference Board of Canada*

Published in Canada | All rights reserved | Agreement No. 40063028 | *Incorporated as AERIC Inc.

An accessible version of this document for the visually impaired is available upon request.

Accessibility Officer, The Conference Board of Canada

Tel.: 613-526-3280 or 1-866-711-2262 E-mail: accessibility@conferenceboard.ca

©The Conference Board of Canada and the torch logo are registered trademarks of The Conference Board, Inc. Forecasts and research often involve numerous assumptions and data sources, and are subject to inherent risks and uncertainties. This information is not intended as specific investment, accounting, legal, or tax advice. The findings and conclusions of this report do not necessarily reflect the views of the external reviewers, advisors, or investors. Any errors or omissions in fact or interpretation remain the sole responsibility of The Conference Board of Canada.

CONTENTS

i	EXECUTIVE SUMMARY
1	Introduction
2	Alberta's Economy
4	Alberta's Demand for Skilled Workers
6	Challenges and Disruptors
9	Sources of Labour Supply
13	Changing Skills Requirements
17	Next Steps
	Appendix A
24	Bibliography

Acknowledgements

This report has been prepared by The Conference Board of Canada in partnership with NorQuest College. It was written and researched by Eleni Kachulis, Research Associate, and Dr. Matthew McKean, Associate Director, Education, The Conference Board of Canada. Funding was provided by the Alberta Ministry of Advanced Education.

The report was reviewed internally by Alison Howard, Principal Research Associate, and Michael Burt, Executive Director, The Conference Board of Canada; and reviewed externally by the project Advisory Committee (Dr. Kazem Mashkournia, Interim Vice-President Academics and Research, Grande Prairie Regional College; Michael Crowe, Vice-President, Academic, Lakeland College; Dr. Terry Chapman, Interim Vice-President, Academic, Medicine Hat College; Dr. Misheck Mwaba, Vice-President Academic, Bow Valley College; and Dr. Paulette Hanna, Vice-President Academic, Red Deer College). Thank you as well to Norma Schneider, Vice-President, Teaching & Learning and Chief Academic Officer, NorQuest College, for leading the Advisory Committee.

The Conference Board is solely responsible for the contents of this report, including any errors or omissions.

EXECUTIVE SUMMARY

Building Skills Connections Series: Alberta in a Nutshell

At a Glance

- Alberta is well positioned to thrive amid disruptors like demographic change and rapid technological development, but meeting the demand for skilled workers will be essential to ensuring its long-term prosperity.
- Skills needs in Alberta are evolving. In-demand jobs increasingly require post-secondary education, and employers are prioritizing new skill sets such as creative/problem-solving skills, digital skills, skills related to international collaboration, and social/human skills.
- There is also a continued need for essential skills such as literacy and numeracy. These will be critical in enabling individuals to adapt to the changing workplace.
- As the economic landscape changes, both employers and post-secondary institutions will have a role in ensuring that Alberta has access to the well-educated, highly skilled workforce it needs.

Albertans are concerned about current and future skills gaps in the province, especially following the 2015–16 recession. While labour shortages are not a new issue in Alberta, skills requirements in the workplace continue to evolve. This report examines the state of skills gaps in Alberta, drawing on relevant literature, current data, and a series of interviews with Alberta employers and labour market experts.

The first in a series of reports on skills needs in Alberta, it lays the groundwork for in-depth analyses of the skills requirements in seven key sectors of the province's economy, providing a broad overview of skills supply and demand in the province.¹

Increasingly, in-demand jobs in Alberta require post-secondary education (PSE). A Government of Alberta study suggests that, among the 197,000 new jobs expected by 2020, over half will require some type of PSE credential.² The province will require even more skilled workers to offset a projected labour shortage of 49,000 workers by 2025.³ We argue that, while Alberta is well positioned for continued prosperity, this prosperity is dependent on the province's ability to meet its evolving skills needs.

Stable economic growth is expected for Alberta in the short to medium term, but factors like an aging population, slower population growth, and a stagnant PSE participation rate will impact the province's supply of skilled workers. However, the province will benefit from a steady flow of migration (both international and interprovincial), and there are opportunities to further engage certain groups—including the Indigenous population, youth, and persons with disabilities—in PSE and the labour market.

1 Sectors examined include oil, gas, and mining; finance, insurance, and real estate; health and medical; agriculture and agri-food; renewable energy and environmental products and services; technology; and creative and cultural industries.

2 Government of Alberta, *Employment and Wages for Alberta Workers*, 2.

3 Government of Alberta, *Alberta's Occupational Demand and Supply Outlook 2015–2025*, 4.

Alberta's continued success depends on its ability to meet evolving skills needs.

Rapid technological development will also transform the labour market, creating a shift in the skills that organizations need to remain competitive. Many Albertans currently work in occupations that are possibly or highly susceptible to automation, and a certain degree of retraining will be required. Further, as the economic landscape changes, employers are prioritizing new skill sets, including creative and problem-solving skills, digital skills, skills related to international collaboration, and social/human skills. There is also a continued need for essential skills—or what one interviewee described as “learning-to-learn” skills. These basic competencies, which include literacy and numeracy, enable individuals to adapt to the changing workplace.

Alberta benefits from a large, diversifying economy and a highly skilled population, and it is expected to continue thriving amid demographic change, rapid technological development, and other labour market disruptors. However, its continued success depends on its ability to meet evolving skills needs—which has important implications for both employers and PSE institutions. Forthcoming Conference Board reports will draw on additional interviews with sector-specific stakeholders, as well as findings from an [online survey](#) of Alberta employers, in order to:

- delve deeper into the challenges facing Alberta's major employment sectors;
- report on the needs, concerns, and priorities of employers across the province;
- expand on the actions that employers and PSE institutions can take to ensure Alberta has a well-educated, highly skilled workforce.



Introduction

Albertans are concerned about current and future skills gaps in the province, especially following the 2015–16 recession. Unemployment rates are higher than the national average, yet employers report that they cannot find employees with the skills they require to sustain and build their businesses. Labour shortages are not a new issue in Alberta, but skills requirements in the workplace continue to evolve. A Government of Alberta study suggests that, among the 197,000 new jobs expected by 2020, over half will require some form of PSE.¹

The province will require even more skilled workers to offset a projected labour shortage of 49,000 workers by 2025.² As the primary suppliers of skilled workers for the province, PSE institutions will play a key role in ensuring Alberta's economic well-being. We argue that, while Alberta is well positioned for continued prosperity, this prosperity is dependent on the province's ability to meet its evolving skills needs.

This report draws on relevant literature, current data, and a series of interviews with Alberta employers and labour market experts to assess the current state of skills gaps in Alberta. The first in a series of reports on skills needs in the province, it lays the groundwork for in-depth analyses of the skills requirements in seven key sectors of the province's economy, providing a broad overview of skills supply and demand in the province.³ Future reports will draw on additional interviews with sector-specific stakeholders, as well as findings from an [online survey](#) of Alberta employers.

1 Government of Alberta, *Employment and Wages for Alberta Workers*, 2.

2 Government of Alberta, *Alberta's Occupational Demand and Supply Outlook 2015-2025*, 4.

3 Sectors examined include oil, gas, and mining; finance, insurance, and real estate; health and medical; agriculture and agri-food; renewable energy and environmental products and services; technology; and creative and cultural industries.

Alberta's Economy

Steady Gains Expected Post-Recession

Alberta emerged from recession in 2017, with full recovery expected by mid-2019. In the short term, the Conference Board forecasts moderate but stable real GDP growth for the province, at 1.9 per cent in 2018 and 1.8 per cent in 2019.⁴ Job creation in Alberta is also expected to remain strong: 40,000 new jobs will be added in 2018, which will facilitate a small decrease in the province's unemployment rate (from 6.7 per cent in 2017 to 6.6 per cent in 2018 and 2019).⁵

In the longer term, Alberta is expected to fare best among the provinces: between 2018 and 2040, GDP growth should average close to 2 per cent.⁶ Alberta's long-term labour force outlook is also positive. While an aging population and slower population growth will contribute to a declining labour force participation rate (which will fall from 72 per cent between 2016 and 2020 to 66.7 per cent between 2036 and 2040), labour force growth in Alberta will not weaken. In fact, it will rise from the 0.7 per cent growth rate seen in 2017 to an average of 1.1 per cent between 2022 and 2040.⁷

When it comes to Alberta's economy, several of our interviewees alluded to the cyclical, boom-and-bust nature of the energy sector.⁸ Indeed, Alberta's economic growth prospects are linked closely with activity and investment in oil and gas. Conference Board forecasts suggest that the price of crude oil will not return to pre-2015 oil boom levels between now and 2040, and that slower investment in the sector will have an impact on job creation, the consumer sector, and migration trends.⁹ (See "Alberta in a Nutshell: Key Economic Indicators" and "Alberta's PSE Ecosystem.")

4 The Conference Board of Canada, *Provincial Outlook Executive Summary*, 25; The Conference Board of Canada, *Provincial Outlook Economic Forecast: Alberta—Spring 2018*.

5 The Conference Board of Canada, *Provincial Outlook Economic Forecast: Alberta—Spring 2018*, 3–4.

6 The Conference Board of Canada, *Provincial Outlook Long-Term Economic Forecast: Alberta—2018*, 22.

7 *Ibid.*, 25.

8 Interview findings.

9 The Conference Board of Canada, *Provincial Outlook Long-Term Economic Forecast: Alberta—2018*, 21.

Alberta in a Nutshell: Key Economic Indicators

Population provincial ranking: Fourth

Population: 4.3 million (Q1 2018)

Projected population in 2040: 5.8 million

GDP: \$327.4 billion (2017)

Employment: 2.3 million (October 2018)

Employment rate: 67.0 per cent (October 2018)

Employment rate provincial ranking: First

Unemployment rate: 7.3 per cent (October 2018)

Unemployment rate provincial ranking: Eighth (October 2018)

Job vacancies: 42,000 (July 2018)

Labour force participation rate: 72.1 per cent (Conference Board forecast for 2018)

Projected labour force participation rate in 2040: 66.7 per cent

Sources: The Conference Board of Canada; Government of Alberta; Statistics Canada.

Alberta's PSE Ecosystem

Alberta has a robust PSE ecosystem made up of 26 publicly funded institutions, including 12 colleges, two polytechnics, and 11 universities. The province's PSE institutions fall into six categories based on factors such as credential offerings, research activity, and primary clients.¹⁰ They include:

- **Comprehensive academic and research institutions** (e.g., University of Alberta, University of Calgary)
- **Baccalaureate and applied studies institutions** (e.g., MacEwan University, Mount Royal University)
- **Polytechnical institutions** (e.g., Northern Alberta Institute of Technology, Southern Alberta Institute of Technology)

¹⁰ Government of Alberta, "Types of Publicly Funded Institutions."

- **Comprehensive community institutions** (e.g., Bow Valley College, Lethbridge College)
- **Independent academic institutions** (e.g., The King’s University, St. Mary’s University)
- **Specialized arts and culture institutions** (e.g., Alberta College of Art and Design, The Banff Centre)¹¹

Albertans can also access private career colleges, which are regulated by the province, and First Nations colleges, which are supported by provincial grants.¹²

In terms of enrolments, Alberta’s PSE system is the fourth largest in Canada, after Ontario, Quebec, and British Columbia. During the 2015–16 academic year, Alberta’s PSE institutions enrolled 185,679 students, including 128,790 in universities and 56,889 in colleges.¹³

Sources: Government of Alberta; Statistics Canada.



11 Government of Alberta, *Institutional Arrangement Under the Six Sector Model*.

12 Government of Alberta, “Private Career Colleges;” Government of Alberta, “First Nations Colleges.”

13 Statistics Canada, Table 37-10-0018-01.

Expected shortages highlight the growing importance of PSE credentials.

Alberta's Demand for Skilled Workers

Skills gaps can be costly: a 2016 study estimated that unmet skills needs are costing next-door neighbour British Columbia up to \$7.9 billion in foregone GDP and over \$1.8 billion in tax revenues each year.¹⁴ While Alberta's economic outlook is largely favourable, meeting the demand for skilled workers in the province will be essential to ensuring its long-term prosperity.

As of July 2018, there were 42,000 vacant jobs in Alberta—a figure that does not yet approach pre-recession levels, but is on an upward trend.¹⁵ The media have also raised concern about Alberta's job vacancy rate.¹⁶ Projections developed by the Centre for Spatial Economics (C4SE) confirm Alberta's labour shortage could grow to about 49,000 by 2025, with in-demand occupations requiring a variety of skill types and levels.¹⁷ Management occupations—which generally require a university degree—will fall short by at least 1,000 workers in several fields, including retail trade, food services and accommodation, and construction and transportation.¹⁸ A shortage of over 5,000 workers is also expected among nurse supervisors and registered nurses.¹⁹ At the college or apprenticeship level, it is predicted that there will be a shortage of 4,800 early childhood educators and assistants by 2025.²⁰ These expected shortages highlight the growing importance of PSE credentials.

In the immediate term, hiring confidence is relatively high: a survey conducted by CPHR Alberta (Chartered Professionals on Human Resources Alberta) in November and December 2017 shows that Alberta human resources professionals are more confident than concerned when it comes to meeting their organization's talent needs in the next

14 McKean, Coburn, and MacLaine, *PSE Skills for a Prosperous British Columbia*, 21.

15 Government of Alberta, "Economic Dashboard."

16 See, for instance, CBC News, "Almost 34,000 Positions Unfilled in Alberta;" Lane and Rastrick, "There Are Nearly 44K Unfilled Jobs in Alberta."

17 Government of Alberta, *Alberta's Occupational Demand and Supply Outlook 2015–2025*, 4.

18 Ibid., 8–9. Statements on educational requirements are based on the skill level ascribed to occupations in Statistics Canada's National Occupational Classification (NOC) system. See Statistics Canada, "Introduction to Edition 2016 of the National Occupational Classification (NOC)."

19 Government of Alberta, *Alberta's Occupational Demand and Supply Outlook 2015–2025*, 13.

20 Ibid.

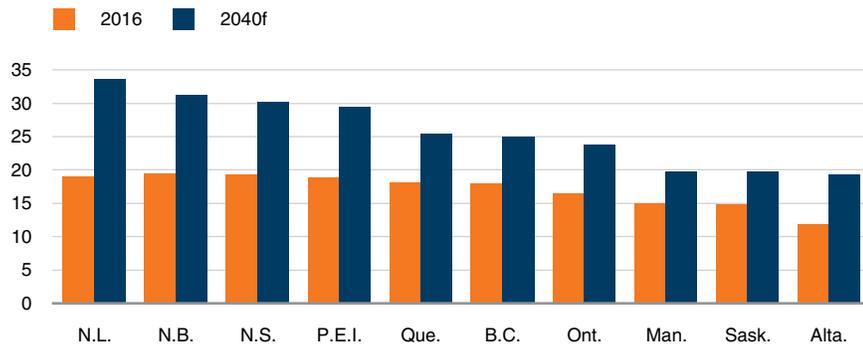
six months. While confidence is lower than it was in the previous survey (conducted in June 2017), this is attributed to decreases among large and medium-sized organizations. For small organizations (fewer than 100 employees), hiring confidence is on the rise.²¹

Moreover, 57 per cent of human resources professionals are very or moderately confident that they can fill vacancies with employees who have equivalent experience and qualifications. It must be noted, however, that results from previous surveys show a clear downward trend.²² It is also taking longer to fill vacant positions at all skill levels.²³ Results from the Conference Board’s **2018 Employer Survey** will shed further light on Alberta employers’ confidence in their ability to meet skills needs, both now and in the medium term.²⁴

Chart 1

Canada Is Aging—But Alberta Is in the Best Shape

(percentage of population aged 65 and older in 2016 and 2040, by province)



f = forecast
 Source: The Conference Board of Canada.

- 21 CPHR Alberta, *Alberta HR Trends Report—Spring 2018*, 2. This survey was completed by 1,240 human resources professionals across Alberta, representing organizations of all sizes, as well as most industrial sectors.
- 22 CPHR Alberta, *Alberta HR Trends Report—Spring 2018*, 8.
- 23 *Ibid.*, 10.
- 24 Despite the higher employer demand for post-secondary educated workers in many professions, several of our interviewees emphasized that there will still be demand for lower-skilled workers in some sectors (e.g., construction, hospitality). It was also noted that the extent to which PSE is required varies according to sector and type of company. One interviewee suggested that in technology start-ups, abilities are often prioritized over credentials.

Challenges and Disruptors

Demographics

The effects of an aging population will be less severe in Alberta compared with the rest of Canada, particularly the Atlantic provinces and Quebec. (See Chart 1.) But more and more Albertans are approaching retirement age: by 2040, the proportion of Albertans aged 65 and over is expected to rise to 19.4 per cent, compared with 12.3 per cent in 2017.²⁵

An aging population also means a rising death rate. Combined with the fact that the average woman in the province can be expected to have only 1.76 children over her lifespan, lower than the 2.1 replacement rate, Alberta can expect a considerable decline in natural population growth. But this will be offset somewhat by migration, in which case Alberta can expect an average annual population growth rate of 1 per cent between 2017 and 2040. This is well below the 3 per cent growth experienced between 2006 and 2017, but it will still play an important role in sustaining Alberta's labour force growth and ensuring its competitiveness among the provinces. Along with Manitoba, Alberta is one of just two provinces whose labour force growth is not expected to weaken between now and 2040.²⁶

Technological Disruptors

In the coming decades, technological developments will have a significant impact on Alberta's labour market. While innovations in artificial intelligence and robotics have the potential to improve quality of life, increase productivity, and create new jobs, they may also render some jobs and tasks obsolete, creating a shift in the skills that organizations need to remain competitive. (See "Changing Skills Requirements.") The effects of artificial intelligence will be felt across sectors: it is predicted that driverless cars, for instance, could disrupt over 33 industries.²⁷ Results from a survey conducted by the Business

25 The Conference Board of Canada, *Provincial Outlook Long-Term Economic Forecast: Alberta—2018*, 21–22.

26 The Conference Board of Canada, *Provincial Outlook Long-Term Economic Forecast: Alberta—2018*, Executive Summary and 22–23.

27 CBInsights, "33 Industries Other Than Auto That Driverless Cars Could Turn Upside Down."

While Alberta has an above-average proportion of employment susceptible to automation, it has low levels of risk across occupations and industries.

Development Bank of Canada in 2017 suggest that over a quarter of employers in Canada have already altered the way they operate because of the digital economy.²⁸

In addition to assisting with decision-making and customer service, artificial intelligence will play a role in automating repetitive tasks.²⁹ In Alberta's case, Rosalie Wyonch of the C.D. Howe Institute estimates that 45.8 per cent of employment in the province is possibly automatable and 33.8 per cent is highly susceptible to automation. This is slightly above the Canadian average.³⁰ However, based on a measure of core skills (literacy, numeracy, and the ability to solve problems in a technology-rich environment), as well as the employment rate and proportion of the population that holds a post-graduate degree, Wyonch identifies Alberta as one of the best-positioned provinces, along with Ontario, in terms of readiness for automation.³¹ She also categorizes it as a lower-risk province with regard to labour market disruption: while Alberta has an above-average proportion of employment susceptible to automation, it has low levels of polarization of risk across occupations and industries.³²

Nevertheless, measures will be necessary to ease the transition to an automated future. With over a third of Alberta's workers currently in jobs that are highly susceptible to automation, many will have to undergo new training, ranging from minimal to significant.³³ Both business and the education system will have a role to play in adjusting to new skills demands. The Canadian Chamber of Commerce, for instance, recommends an increased focus on new learning mechanisms (e.g., short duration programs and micro-credentials); greater support of new learning pathways and prior learning recognition; and more partnerships between business and PSE.³⁴

28 Business Development Bank of Canada, *Future-Proof Your Business*, 16.

29 Albert, "Are We Ready for the Digital Tsunami?"

30 Wyonch, *Risk and Readiness*, 13.

31 Ibid., 6–8.

32 Ibid., 6.

33 Ibid., 10.

34 Canadian Chamber of Commerce, *Skills for an Automated Future*, 5.

Beyond technology, a number of other drivers have already begun shaping the future of work and influencing future skills needs. The Institute for the Future, a strategic research group based in California, has identified factors such as increased global connectedness, superstructured organizations,³⁵ and new multimedia technologies.³⁶ Other disruptions to today's work environment include trends such as flexible work arrangements and economic realities such as the rise in part-time and temporary employment (i.e., the gig economy).³⁷

Societal trends such as urbanization, increased need for environmental sustainability, and increasing inequality will also present risks and opportunities for the workforce.³⁸

Sources of Labour Supply

Beyond the current workforce, employers in Alberta look to several sources for workers, including new graduates, immigrants, and interprovincial migrants.³⁹ While continued growth is expected for Alberta's labour force over the long term, the majority of jobs being created up to 2020 are expected to require education beyond high school, with high demand for credentials at the university level.⁴⁰ The PSE sector has an important role to play in training the skilled graduates that Alberta's economy will need both now and in the future.

Education and Skills

As of 2016, approximately 58 per cent of Alberta's labour force held a post-secondary credential.⁴¹ (See Chart 2.) In the past, favourable labour market conditions in Alberta meant there were attractive employment prospects for high school graduates in the province. However, data

35 This refers to organizations that, enabled by access to a new level of collective intelligence, can achieve scale and reach that would not have been possible within traditional organizational boundaries. See Davies, Fidler, and Gorbis, *Future Work Skills 2020*, 5.

36 Davies, Fidler, and Gorbis, *Future Work Skills 2020*, 4–5.

37 See, for example, MacLean, *Flexible Work Arrangements*; Nazareth, "The Gig Economy Is Here."

38 Deegan and Martin, *Demand Driven Education*, 10.

39 Interview findings.

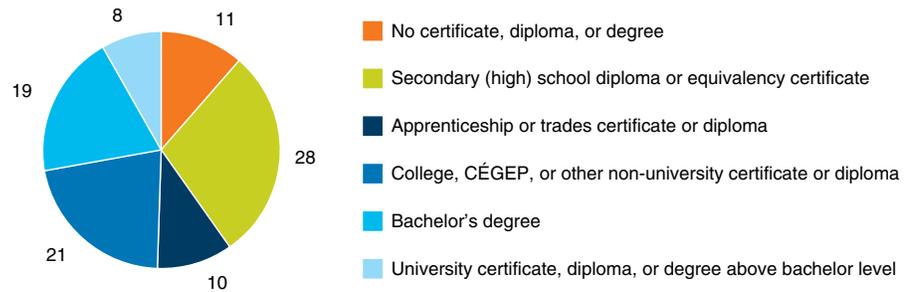
40 Government of Alberta, *Employment and Wages for Alberta Workers*, 2.

41 Statistics Canada, Table 98-400-X2016283.

Chart 2

More Than Half of Albertan Workers Hold a Post-Secondary Credential

(percentage of labour force aged 15 or over by educational attainment, 2016)



Note: Total does not add to 100 due to rounding.
Source: Statistics Canada.

suggest, and our interviewees confirm, that PSE is increasingly required to access well-paying jobs.⁴² What's more, Labour Force Survey data show that Albertans with post-secondary credentials have better employment outcomes: they receive a wage premium, have a higher workforce participation rate, and experience lower levels of unemployment.⁴³

Enrolment in Alberta's post-secondary institutions is growing: between 2012 and 2016, all credentialed PSE programs experienced an increase in applicants, with this growth supported largely by international students.⁴⁴ Rising education requirements for occupations in many sectors may also encourage more Albertans to pursue PSE. It is expected that over the next decade enrolment in publicly funded PSE institutions in Alberta will increase by 5.6 per cent. The majority of growth will occur in urban areas, but most other service regions are also expected to grow.⁴⁵ PSE attainment levels are also expected to increase: between 2015 and 2025, the proportion of Albertans with a PSE credential is expected to rise from 56 to 64 per cent and the proportion of Albertans with less than high school is expected to fall.⁴⁶

42 Alberta Advanced Education, *Campus Alberta Planning Resource 2016*, 11; interview findings.

43 Government of Alberta, *Employment and Wages for Alberta Workers*, 1–2.

44 Alberta Advanced Education, *Campus Alberta Planning Resource 2016*, 1.

45 *Ibid.*, 2.

46 *Ibid.*, 3.

We also heard that, while it will be important to ensure that employers have access to a sufficient number of graduates from the disciplines they require, it is also necessary to focus on the quality of graduates' skills and ensure their knowledge is up to date. Some interviewees also highlighted the importance of previous professional experience for new graduates—something that post-secondary institutions are making efforts to provide through work-integrated learning programs.⁴⁷

Migration

While the proportion of working-age Albertans with a post-secondary credential has risen over the past 10 years, the rate at which young Albertans (18 to 34) are participating in PSE has remained almost constant. This suggests that migration has played a key role in supporting Alberta's population of skilled workers.⁴⁸ Conference Board forecasts suggest that net migration to Alberta from other countries—which reached 40,000 in 2017—will be relatively stable in the long term, hovering between 38,000 and 39,000 over the next 20 years.⁴⁹



⁴⁷ Interview findings.

⁴⁸ Alberta Advanced Education, *Campus Alberta Planning Resource 2016*, 1.

⁴⁹ The Conference Board of Canada, *Provincial Outlook Long-Term Economic Forecast: Alberta—2018*, 24.

Alberta has the highest female labour force participation rate among the provinces, as well as the highest female employment rate.

Migration from other provinces is also a key source of skilled workers for Alberta. While net interprovincial migration to Alberta was negative in 2016 and 2017, Alberta's economic recovery and the rise in crude oil prices will attract workers from other provinces, and is expected to result in a positive figure for net interprovincial migration in the long term. The Conference Board estimates that Alberta will benefit from an average annual net gain of 5,100 interprovincial migrants between now and 2040.⁵⁰

Untapped Talent

While migration is a key contributor to Alberta's population of skilled workers, individuals already living in the province are another important source of labour. But not all demographic groups are being fully leveraged as a source of talent. The Indigenous population, for instance, is growing more rapidly than the non-Indigenous population, and is considerably younger than the general population in the province, meaning it could be an important source of labour as Albertans age and population growth slows.⁵¹ As of 2016, though, a PSE attainment gap persisted between Indigenous (47.7 per cent) and non-Indigenous (64.9 per cent) Albertans.⁵² Indigenous Albertans' labour force participation rate (74.6 per cent) is also lower than that of non-Indigenous Albertans (84.1 per cent).⁵³ In addition to being a moral imperative, closing the education gap could have significant benefits for Alberta's economy.

The province could also access new talent by further engaging youth, women, and persons with disabilities in the labour market. Currently, the unemployment rate for Albertans aged 15 to 24 is 12.2 per cent, in contrast with a rate of 5.9 per cent for those aged 25 and over.⁵⁴ The youth unemployment rate is particularly high among young men, which could be connected to the fact that males aged 15 to 24 have a lower PSE attainment rate than their female counterparts.⁵⁵ In 2016,

50 Ibid.

51 Government of Alberta, *Alberta's Occupational Supply Outlook 2013–2023*, 4.

52 Statistics Canada, Table 98-400-X2016266. Refers to Albertans aged 25–64.

53 Ibid.

54 Government of Alberta, *Alberta Labour Force Statistics July, 2018*, 1.

55 Ibid.

approximately 81.7 per cent of males in Alberta aged 15 to 24 had no post-secondary certificate, diploma, or degree, in contrast with 76.7 per cent of females. In addition, slightly more males (approximately 37.4 per cent) than females (approximately 34.1 per cent) held no certificate, diploma, or degree at all.⁵⁶

This is likely linked to the fact that, during the boom, workers could access attractive employment opportunities in construction, transportation, and oil and gas (male-dominated sectors) without a post-secondary credential. Our interviewees suggest that these opportunities are growing scarcer since the downturn, with more and more employers seeking PSE-educated workers to address their evolving skills needs.⁵⁷

When it comes to women's employment outcomes, Alberta fares comparatively well. It has the highest female labour force participation rate among the provinces, as well as the highest female employment rate. At the same time, women's participation still lags men's by over 10 percentage points (66.2 per cent vs. 78.4 per cent), and women are also more likely than men to work part time—a trend that is also present at the national level, and has been linked to women's greater share of household and child-rearing duties.⁵⁸

Finally, with the aging of Alberta's population, it is expected that the proportion of Albertans with activity limitations or disabilities will rise.⁵⁹ Canadians with disabilities have a higher unemployment rate and a lower employment rate than the overall population. This has been linked partly to factors on the employer side, including discriminatory attitudes, lack of knowledge about accommodation, and apprehension with regard to cost.⁶⁰ Addressing these challenges, in addition to helping all Albertans reach their full potential, could be an important way for employers to access new talent.

56 Statistics Canada, Table 98-400-X2016283.

57 Interview findings.

58 Government of Alberta, *2017 Alberta Labour Force Profiles: Women, 1–2*; Moyser, *Women and Paid Work*.

59 Government of Alberta, *Alberta's Occupational Supply Outlook 2013–2023*, 6.

60 Turcotte, *Persons With Disabilities and Employment*.

“Learning-to-learn” skills, which include literacy and numeracy, enable individuals to adapt to the changing workplace.

Changing Skills Requirements

Skills requirements in Alberta are evolving, pointing to an increased need for high-skilled workers in the province.⁶¹ This is also the case at the national level. Between 1999 and 2012, nearly all net job creation in the country was high skill (i.e., typically requiring a four-year PSE credential)—a trend that is likely to continue. During the same period, the share of middle-skill jobs (those typically requiring some PSE, but not a four-year credential) decreased, while low-skill jobs (those requiring no PSE) increased only slightly.⁶² In the wake of technological advances and other drivers of change, many employers will also require different types and combinations of skills. An estimated 50 per cent of jobs in Canada will undergo a significant skills overhaul in the next decade.⁶³

This has important implications for PSE institutions, which have been called on to provide programming for new learner demographics—for instance, mature learners who wish to upskill or reskill while continuing to work full or part time. Interviewees suggested there is demand for new delivery models (e.g., modular learning, partial credentials).⁶⁴

The Royal Bank of Canada’s 2018 report *Humans Wanted: How Canadian Youth Can Thrive in the Age of Disruption* emphasizes the importance of focusing on foundational skills to enhance mobility between jobs. It also predicts high demand for digital fluency, global competencies (e.g., language, cultural awareness, adaptability), judgment, decision-making, and the ability to manage people and resources.⁶⁵ Ontario’s Institute for Competitiveness and Prosperity highlights a need for more workers with the right combination of cognitive, digital, and problem-solving skills.⁶⁶

61 Interview findings.

62 Alexander, *Job One Is Jobs*, 5. For definitions of low skill, middle skill, and high skill, see Burleton, *Are Medium-Skilled Jobs in Canada Experiencing a Hollowing Out?*

63 Royal Bank of Canada, *Humans Wanted*, 11.

64 Interview findings.

65 RBC, *Humans Wanted*, 3.

66 Institute for Competitiveness and Prosperity, *The Labour Market Shift*, 18.

In Alberta, in particular, there is growing need for creative skills such as problem-solving, thinking outside the box, and examining ideas from different perspectives. Our interviewees identified the need for skill sets related to international collaboration (e.g., supply chain skills, knowledge about international trade) and stressed the importance of essential skills and social/human skills (discussed below).⁶⁷

Interviewees highlighted existing and looming skills shortages in certain Alberta sectors, such as transportation, agriculture, and construction (due partly to the retirement of experienced workers). However, it was also mentioned that many Alberta employers are unaware of the skill types and levels they require, and in some cases can only articulate future skills needs in broader terms (e.g., technology skills). In these cases, post-secondary credentials are often used as a proxy.⁶⁸



67 Interview findings.

68 Ibid.

Essential Skills and Continuous Learning

As the labour market evolves, workers will require the ability to adapt and reskill. Interviewees emphasized the importance of employer involvement in training and reskilling, but also noted the role of the individual worker. In addition to being willing to reskill, workers must also have essential skills—or what one interviewee described as “learning-to-learn” skills. These basic competencies, which include literacy and numeracy, enable individuals to adapt to the changing workplace.⁶⁹

The majority of respondents to the 2018 Business Council Skills Survey, a survey of 95 large Canadian private-sector employers, expressed the belief that new post-secondary graduates have basic numeracy and literacy skills.⁷⁰ However, research suggests that Canada has room for improvement when it comes to essential skills. A 2018 report from the Canada West Foundation argued that 40 per cent of working Canadians lack some of the essential skills they need to perform optimally at their jobs. This includes almost a third of 16- to 25-year-olds, almost a third of university graduates, and half of those who did not complete high school. Higher essential skills shortages were found among immigrants and among Indigenous people living on-reserve in most of the West. Essential skills shortages were shown to persist across all occupations and industry sectors.⁷¹

What’s more, despite Canada’s high level of PSE attainment, results from the Organisation for Economic Co-operation and Development’s (OECD) Survey of Adult Skills show that Canadians with PSE credentials fall below the OECD average in literacy and numeracy.⁷² Note, however, that this is impacted partly by the high proportion of immigrants in Canada (many of whom do not speak French or English as a first language), as testing was conducted only in the country’s official languages.⁷³

69 Ibid.

70 Business Council of Canada, *Navigating Change*, 7.

71 Lane and Murray, *Smarten Up*, 3.

72 Council of Ministers of Education, Canada, *Post-Secondary Education and Skills in Canada*, 18.

73 Ibid., 26.

Human Skills

While machines can outperform humans in tasks like calculation and pattern recognition, humans fare better when it comes to creativity, complex problem-solving, and incorporating contextual information. Occupations that are more difficult to automate often include significant social components or require workers to adapt to new situations.⁷⁴ Interviewees emphasized that employers will need human skills going forward, in Alberta and more broadly. One interviewee noted that, even if employers are hiring workers with the right technical skills, they may still find soft skills (e.g., people skills, communication skills, the ability to work in a team) lacking. It was emphasized that social or human skills will be essential both for working alongside artificial intelligence and for the jobs that artificial intelligence will create.⁷⁵ The Conference Board's Matthew McKean has argued a similar point, suggesting that increased presence of technology in the workplace will create opportunities to value and invest in social skills, soft skills, and emotional labour.⁷⁶ (See "Skills for the Future.")

Skills for the Future

In 2011, the Institute for the Future identified 10 key work skills that would be important leading up to 2020. In 2016, the Institute updated this work, validating the previously identified skills and adding resilience to the list. (See the full list of skills below.) The Conference Board is investigating the importance of these skills in the Alberta context: results from the 2018 Employer Survey will shed light on which of these future work skills Alberta employers are seeking and prioritizing. (See "PSE Skills for a Prosperous Alberta: 2018 Employer Survey.")

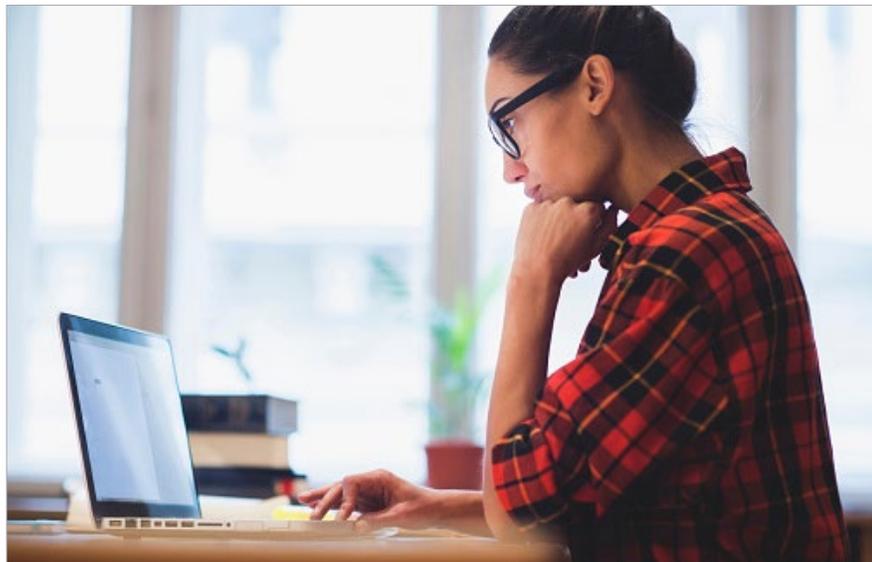
- **Sense-making** (e.g., connecting things to come up with new ideas and deeper understanding)
- **Social intelligence** (e.g., asking the right questions, connecting with others in a direct way to stimulate reactions and interactions)
- **Novel and adaptive thinking** (e.g., coming up with new responses and solutions beyond the norm, adapting to new realities)
- **Cross-cultural competency** (e.g., ability to operate in different cultural settings)

74 Wyonch, *Risk and Readiness*, 3.

75 Interview findings.

76 McKean, "In a Time of Robots, Educators Must Invest in Emotional Labour."

- **Computational thinking** (e.g., analytical, ability to see trends and patterns and turn data into insights)
 - **New-media literacy** (e.g., ability to develop content, use social media for persuasive communications)
 - **Transdisciplinarity** (e.g., ability to understand concepts across multiple disciplines, see the big picture, synthesize ideas, connect the dots)
 - **Design mindset** (e.g., ability to develop tasks, processes, and work environments for desired outcomes)
 - **Cognitive load management** (e.g., ability to filter information for importance, take a disciplined approach to managing distractions)
 - **Virtual collaboration** (e.g., ability to work efficiently and productively as part of a virtual team)
 - **Resilience** (e.g., responding positively to organizational change, new expectations, and constantly evolving challenges)⁷⁷
-



77 See Davies, Fidler, and Gorbis, *Future Work Skills 2020*; Fidler, *Future Skills*.

Next Steps

Alberta benefits from a large, diversifying economy and a highly skilled population. It is well positioned to continue thriving amid demographic change, rapid technological development, and other labour market disruptors. However, its continued success depends on its ability to meet evolving skills needs—which has important implications for both employers and PSE institutions. Forthcoming Conference Board reports will delve deeper into the challenges facing Alberta’s major employment sectors; report on the needs, concerns, and priorities of employers across the province; and expand on the actions that employers and PSE institutions can take to ensure Alberta has a well-educated, highly skilled workforce.

PSE Skills for a Prosperous Alberta: 2018 Employer Survey

Make your voice heard!

If you are an employer in Alberta in one of the following seven sectors, we want to hear about your company’s skills requirements and what can be done to address them:

1. Oil, gas, and mining
2. Finance, insurance, and real estate
3. Health and medical
4. Agriculture and agri-food
5. Renewable energy and environmental products and services
6. Technology
7. Creative and cultural industries

Findings from the survey will be shared in a Conference Board report released in early 2019.

The survey is open until **December 31, 2018**. Visit the following link to have your say: <https://www.conferenceboard.ca/edu/skills-for-a-prosperous-alberta-2018-employer-survey>.

Questions? Contact Eleni Kachulis, Research Associate, at 1-866-711-2262 ext. 315 or kachulis@conferenceboard.ca.

APPENDIX A

Bibliography

Albert, Sylvie. "Are We Ready for the Digital Tsunami?" *The Conversation*, August 29, 2018. Accessed August 31, 2018. <https://theconversation.com/are-we-ready-for-the-digital-tsunami-100879>.

Alberta Advanced Education. *Campus Alberta Planning Resource 2016*. Accessed October 16, 2018. <https://open.alberta.ca/dataset/0fe6d666-290e-422f-91a1-4690310f0b41/resource/06cc6393-6b84-4ded-8df8-155361e1c4bd/download/capr-2016.pdf>.

Alexander, Craig. *Job One Is Jobs: Workers Need Better Policy Support and Stronger Skills*. Toronto: C.D. Howe Institute, February 2016. Accessed August 29, 2018. https://www.cdhowe.org/sites/default/files/attachments/research_papers/mixed/e-brief_227_0.pdf.

Burleton, Derek. *Are Medium-Skilled Jobs in Canada Experiencing a Hollowing Out, U.S. Style?* Toronto: TD Economics, February 26, 2013. Accessed September 21, 2018. <https://www.td.com/document/PDF/economics/special/AreMediumSkilledJobsInCanadaExperiencingAHollowingOut.pdf>.

Business Council of Canada. *Navigating Change: 2018 Business Council Skills Survey*. Ottawa and Toronto: Business Council of Canada and Morneau Shepell, Spring 2018. Accessed August 27, 2018. <https://thebusinesscouncil.ca/publications/2018skillssurvey/>.

Business Development Bank of Canada. *Future-Proof Your Business: Adapting to Technology and Demographic Trends*. Ottawa: BDC, October 2017. Accessed October 16, 2018. https://www.bdc.ca/EN/Documents/analysis_research/bdc-study-future-proof-your-business.pdf.

Canadian Chamber of Commerce. *Canada's Skills Crisis: What We Heard*. Ottawa: Canadian Chamber of Commerce, 2012. Accessed August 27, 2018. <http://www.chamber.ca/download.aspx?t=0&pid=f1c0b24c-9bae-e211-8bd8-000c291b8abf>.

—. *Fragmented Systems: Connecting Players in Canada's Skills Challenge*. Ottawa: Canadian Chamber of Commerce, 2015. Accessed August 27, 2018. <http://www.chamber.ca/download.aspx?t=0&pid=92fc5fd5-ea5a-e511-9f7a-000c29c04ade>.

—. *Generation Innovation: The Talent Canada Needs for the New Economy*. Ottawa: Canadian Chamber of Commerce, 2016. Accessed August 27, 2018. <http://www.chamber.ca/media/blog/16111-generation-innovation-the-talent-canada-needs-for-the-new-economy/>.

—. *Skills for an Automated Future*. Ottawa: Canadian Chamber of Commerce, 2018. Accessed August 27, 2018. <http://www.chamber.ca/media/blog/180323-skills-for-an-automated-future/>.

CBC News. "Almost 34,000 Positions Unfilled in Alberta as Job Vacancy Rate Rises." *CBC News*, December 12, 2017. Accessed August 27, 2018. <https://www.cbc.ca/news/canada/calgary/unfilled-jobs-cfib-independent-business-employment-1.4444286>.

CBInsights. "33 Industries Other Than Auto That Driverless Cars Could Turn Upside Down." September 20, 2018. Accessed September 25, 2018. <https://www.cbinsights.com/research/13-industries-disrupted-driverless-cars/>.

Coates, Ken. *Career Ready: Towards a National Strategy for the Mobilization of Canadian Potential*. Ottawa: Business Council of Canada, March 2015. Accessed August 29, 2018. <https://thebusinesscouncil.ca/publications/career-ready-towards-a-national-strategy-for-the-mobilization-of-canadian-potential/>.

Coates, Ken S., and Douglas Auld. *Performance Anxiety: Post-Secondary Education and the Future of the Canadian Workforce*. Ottawa: Macdonald-Laurier Institute, May 2018. Accessed August 29, 2018. https://macdonaldlaurier.ca/files/pdf/MLI_PSE_F_web-ready.pdf.

Conference Board of Canada, The. *Canadian Outlook Economic Forecast—2018*. Ottawa: CBoC, 2018.

—. *Provincial Outlook Economic Forecast: Alberta—Spring 2018*. Ottawa: CBoC, 2018.

—. *Provincial Outlook Executive Summary—Outlook Summer 2018*. Ottawa: CBoC, forthcoming.

—. *Provincial Outlook Long-Term Economic Forecast: Alberta—2018*. Ottawa: CBoC, 2018.

Council of Ministers of Education, Canada. *Postsecondary Education and Skills in Canada: Findings From the Programme for the International Assessment of Adult Competencies (PIAAC)*. Toronto: CMEC. Accessed September 17, 2018. http://www.cmec.ca/Publications/Lists/Publications/Attachments/362/PIAAC_PSE_CMEC_2016_EN.pdf.

CPHR Alberta. Alberta Hiring Confidence Index January–June 2018. CPHR Alberta, 2018. Accessed August 27, 2018. <https://www.cphrab.ca/alberta-HCI-Jan-June-2018>.

—. *Alberta HR Trends Report—Spring 2018*. Calgary: CPHR Alberta, 2018. Accessed August 27, 2018.

Davies, Anna, Devin Fidler, and Marina Gorbis. *Future Work Skills 2020*. Palo Alto, CA: Institute for the Future for the University of Phoenix Research Institute, 2011. Accessed September 13, 2018. http://www.iffi.org/uploads/media/SR-1382A_UPRI_future_work_skills_sm.pdf.

Deegan, Joe, and Nathan Martin. *Demand Driven Education: Merging Work & Learning to Develop the Human Skills That Matter*. London, UK: JFF and Pearson, July 2018. Accessed September 25, 2018. https://www.pearson.com/content/dam/one-dot-com/one-dot-com/global/Files/about-pearson/innovation/open-ideas/DDE_Pearson_Report_3.pdf.

Drummond, Don, and Cliff Halliwell. *Labour Market Information: An Essential Part of Canada's Skills Agenda*. Ottawa: Business Council of Canada, June 2016. Accessed August 29, 2018. <http://thebusinesscouncil.ca/wp-content/uploads/2016/06/Labour-Market-Information-June-13.pdf>.

EDUCAUSE. *NMC Horizon Report Preview: 2018 Higher Education Edition*. Louisville, CO: EDUCAUSE, 2018. Accessed September 11, 2018. <https://library.educause.edu/~media/files/library/2018/4/previewhr2018.pdf>.

Esses, Victoria M., Meyer Burstein, Zenaida Ravanera, Stacey Hallman, and Stelian Medianu. *Alberta Settlement Outcomes Survey*. Pathways to Prosperity for Alberta Human Services, March 2013. Accessed September 20, 2018. <https://open.alberta.ca/dataset/dcf0c5d1-9894-402c-b479-e31b491d6518/resource/3a1833e9-98d5-4de2-bc41-1eeee76cd9c4/download/alberta-outcomes-settlement-survey-results.pdf>.

Fidler, Devin. *Future Skills: Update and Literature Review*. Palo Alto, CA: Institute for the Future for the ACT Foundation and the Joyce Foundation, July 2016. Accessed September 17, 2018. http://www.iftf.org/fileadmin/user_upload/downloads/wfi/ACTF_IFTF_FutureSkills-report.pdf.

Fields, Daniel, Robyn Gibbard, and Carlos Murillo. *Alberta Fiscal Snapshot: Improving Fiscal Picture Contingent on Rebounding Oil Royalties*. Ottawa: The Conference Board of Canada, 2017.

Government of Alberta. *Alberta's Occupational Supply Outlook 2013–2023: Visible Minorities, Aboriginals, and People With Disabilities*. Edmonton: Government of Alberta, 2014. Accessed August 27, 2018. <https://open.alberta.ca/dataset/7c0e5e8f-9e9b-43b2-98f0-ba1f29e0a909/resource/06117ee4-de6b-4955-a967-0124bbbc966a/download/2014-ab-occupational-supply-outlook-2013-2023-visible-minorities-aboriginals-people-disabilities.pdf>.

—. *Alberta's Supply Outlook Model 2015–2025: Education and Skills*. Edmonton: Government of Alberta, 2015. Accessed August 27, 2018. <https://open.alberta.ca/dataset/5376db45-4459-41bd-b8c5-a0c3b1b4235a/resource/de6446e5-d0b3-4e81-a7a7-a26576b234cb/download/supply-outlook-model-education-and-skills.pdf>.

—. *Alberta's Occupational Demand and Supply Outlook 2015–2025*. Edmonton: Government of Alberta, August 2016. Accessed August 27, 2018. <https://work.alberta.ca/documents/occupational-demand-and-supply-outlook-2015-2025.pdf>.

—. *Employment and Wages for Alberta Workers With a Post-Secondary Education*. Edmonton: Government of Alberta, October 2016. Accessed September 5, 2018. <https://work.alberta.ca/documents/employment-and-wages-with-post-secondary.pdf>.

—. *2017 Job Vacancy Rate, Average Weekly Hours Worked, and Average Hourly Wage by Occupation: Alberta and Economic Regions*. Edmonton: Government of Alberta, 2017. Accessed August 27, 2018. <https://work.alberta.ca/documents/top-fifty-occupations-in-alberta-by-vacancy.pdf>.

—. *Short-Term Employment Forecast 2017–2019*. Edmonton: Government of Alberta, 2017. Accessed August 27, 2018. <https://work.alberta.ca/documents/short-term-employment-forecast.pdf>.

—. *2017 Alberta Labour Force Profiles: Women*. Edmonton: Government of Alberta, 2018. Accessed August 27, 2018. <https://work.alberta.ca/documents/labour-profile-women.pdf>.

—. *2017 Alberta Labour Force Profiles: Youth*. Edmonton: Government of Alberta, 2018. Accessed August 27, 2018. <https://work.alberta.ca/documents/labour-profile-youth.pdf>.

—. *2017 Annual Alberta Regional Labour Market Review*. Edmonton: Government of Alberta, 2018. Accessed August 27, 2018. <https://open.alberta.ca/dataset/03e5615c-5d65-4949-b08d-3bf50fdc4f1e/resource/8279a61c-7da8-4e43-8a42-93ec66043ec0/download/annual-alberta-regional-labour-market-review.pdf>.

—. “Economic Dashboard.” Last modified July 2018. Accessed August 27, 2018. <http://economicdashboard.alberta.ca/>.

—. *Labour Force Statistics July 2018: Alberta Highlights*. Last modified August 10, 2018. Accessed August 27, 2018. <https://open.alberta.ca/dataset/ce51e3c3-0ab0-452c-bfad-5014c1238f86/resource/3315a190-b7ff-439e-998c-976ecfea196b/download/alberta-highlights-july-2018.pdf>.

—. *Labour Market Notes*. Last modified August 2018. Accessed August 27, 2018. <https://open.alberta.ca/dataset/02edb3a8-8a3b-4162-a74c-eea6de1b7320/resource/5c6599fa-929c-4825-839f-02fbe9c4caf4/download/2018-08-labour-market-notes.pdf>.

- . *Alberta Labour Force Statistics July, 2018*. Accessed August 27, 2018. https://open.alberta.ca/dataset/b754ca87-2e9b-4a80-b7b2-2cfef8e53ff4/resource/f438ef31-0633-49d1-a4d4-7f22e6d8814c/download/public_package.pdf.
- . “First Nations Colleges.” Accessed September 24, 2018. <http://advancededucation.alberta.ca/post-secondary/institutions/fnmi>.
- . *Institutional Arrangement Under the Six Sector Model*. Accessed September 24, 2018. <http://advancededucation.alberta.ca/media/155107/sixsectormodel.pdf>.
- . “Private Career Colleges.” Accessed September 24, 2018. <http://advancededucation.alberta.ca/post-secondary/institutions/private/>.
- . “Types of Publicly Funded Institutions.” Accessed September 24, 2018. <http://advancededucation.alberta.ca/post-secondary/institutions/public/>.
- Government of Canada. “Canadian Occupational Projection System (COPS): Imbalances Between Labour Demand and Supply (2017–2026).” Accessed August 29, 2018. <http://occupations.esdc.gc.ca/sppc-cops/l.3bd.2t.1ilshtml@-eng.jsp?lid=16&fid=1&lang=en>.
- Grant, Michael. *Aligning Skills Development With Labour Market Need*. Ottawa: The Conference Board of Canada, 2016.
- . *Brain Gain 2015: The State of Canada’s Learning Recognition System*. Ottawa: The Conference Board of Canada, 2016.
- Harder, Catherine, Geoff Jackson, and Janet Lane. *Talent Is Not Enough: Closing the Skills Gap*. Calgary: Canada West Foundation, 2014. Accessed August 27, 2018. http://cwf.ca/wp-content/uploads/2015/10/CWF_HCP_TalentNotEnough_Report_SEP2014.pdf.
- Institute for Competitiveness and Prosperity. *The Labour Market Shift: Training a Highly Skilled and Resilient Workforce in Ontario*. Working Paper 29, Toronto: Institute for Competitiveness and Prosperity, September 2017. Accessed August 29, 2018. https://www.competeprosper.ca/uploads/The_labour_market_shift_in_Ontario_Sept_2017.pdf.

Kent, Gordon. "Demographics, Technology Changing the Face of Alberta's Workforce." *Edmonton Journal*, October 16, 2017. Accessed August 27, 2018. <https://edmontonjournal.com/business/commercial-real-estate/demographics-technology-changing-the-face-of-albertas-workforce>.

Lane, Janet, and Christopher Rastrick. "There Are Nearly 44K Unfilled Jobs in Alberta. So What's Going On?" CBC News, February 28, 2017. Accessed August 27, 2018. <https://www.cbc.ca/news/opinion/alberta-unfilled-jobs-different-approach-to-hiring-opinion-1.4001396>.

Lane, Janet, and Jeff Griffiths. *Matchup: A Case for Pan-Canadian Competency Frameworks*. Canada West Foundation, 2017. Accessed September 20, 2018. http://cwf.ca/wp-content/uploads/2017/02/HCC_Matchup_Report_FEB2017_WEB.pdf.

Lane, Janet, and T. Scott Murray. *Smarten Up: It's Time to Build Essential Skills*. Calgary: Canada West Foundation, June 2015. Accessed August 29, 2018. <http://cwf.ca/research/publications/smarten-up-its-time-to-build-essential-skills-2/>.

MacLean, Kathryn. *Flexible Work Arrangements: Transforming the Way Canadians Work*. Ottawa: The Conference Board of Canada, 2018.

McKean, Matthew. "In a Time of Robots, Educators Must Invest in Emotional Labour." *The Conversation*, November 26, 2017. Accessed September 5, 2018. <https://theconversation.com/in-a-time-of-robots-educators-must-invest-in-emotional-labour-88016>.

McKean, Matthew, Veldon Coburn, and Cameron MacLaine. *PSE Skills for a Prosperous British Columbia: 2016 Edition*. Ottawa: The Conference Board of Canada, December 2016. Accessed August 29, 2018. <https://www.conferenceboard.ca/e-library/abstract.aspx?did=8343>.

Moyser, Melissa. *Women and Paid Work*. Ottawa: Statistics Canada, March 8, 2017. Accessed September 21, 2018. <https://www150.statcan.gc.ca/n1/pub/89-503-x/2015001/article/14694-eng.htm>.

Munro, Daniel, and James Stuckey. *The Need to Make Skills Work: The Cost of Ontario's Skills Gap*. Ottawa: The Conference Board of Canada, June 2013. Accessed August 29, 2018. https://www.conferenceboard.ca/temp/6be8146f-42de-4102-8195-45fef876033a/14-032_SkillsGap_RPT.pdf.

Nazareth, Linda. "The Gig Economy Is Here—and We Aren't Ready." *The Globe and Mail*, October 20, 2017. Accessed September 21, 2018. <https://www.theglobeandmail.com/report-on-business/rob-commentary/the-gig-economy-is-here-and-we-arent-ready/article36678505/>.

Organisation for Economic Co-operation and Development. *Getting Skills Right: Assessing and Anticipating Changing Skill Needs*. Paris: OECD, 2016. <http://www.oecd.org/publications/getting-skills-right-assessing-and-anticipating-changing-skill-needs-9789264252073-en.htm>.

Public Policy Forum. *Employment Challenges for Youth in a Changing Economy*. Ottawa: PPF, 2013. Accessed August 29, 2018. https://www.ppforum.ca/wp-content/uploads/2018/03/Report_ENG-Final_0.pdf.

Rieger, Sarah. "It's Time to Prepare for Work in the Age of Automation, Say Experts." *CBC News*, October 26, 2017. Accessed August 27, 2018. <https://www.cbc.ca/news/canada/calgary/work-automation-1.4374271>.

Royal Bank of Canada. *Humans Wanted: How Canadian Youth Can Thrive in the Age of Disruption*. RBC, 2018. Accessed August 27, 2018. http://www.rbc.com/newsroom/_assets-custom/pdf/03-2018-rbc-future-skills-report.pdf.

Statistics Canada. "Canada at a Glance 2018: Population." Accessed November 9, 2018. <https://www150.statcan.gc.ca/n1/pub/12-581-x/2018000/pop-eng.htm>.

—. "Introduction to Edition 2016 of the National Occupational Classification (NOC)." Accessed November 9, 2018. <http://noc.esdc.gc.ca/English/noc/Introduction.aspx?ver=16>.

—. Table 37-10-0018-01, Postsecondary Enrolments, by Registration Status, Institution Type, Sex and Student Status. Accessed November 12, 2018. <https://www150.statcan.gc.ca/t1/tbl1/en/tv.action?pid=3710001801>.

—. Table 98-400-X2016266, Aboriginal Identity (9), Highest Certificate, Diploma or Degree (15), Labour Force Status (8), Registered or Treaty Indian Status (3), Residence by Aboriginal Geography (10), Age (10) and Sex (3) for the Population Aged 15 Years and Over in Private Households of Canada, Provinces and Territories, 2016 Census—25% Sample Data. Accessed November 12, 2018. <https://www150.statcan.gc.ca/n1/en/catalogue/98-400-X2016266>.

—. Table 98-400-X2016283, Labour Force Status (8), Highest Certificate, Diploma or Degree (11), Major Field of Study—Classification of Instructional Programs (CIP) 2016 (43), Age (9) and Sex (3) for the Population Aged 15 Years and Over in Private Households of Canada, Provinces and Territories and Census Divisions, 2016 Census—25% Sample Data. Accessed November 12, 2018. <https://www150.statcan.gc.ca/n1/en/catalogue/98-400-X2016283>.

Tibando, A. J., and Andrew Do. *Understanding the Talent Gap: Lessons + Opportunities for Canada*. Toronto: Brookfield Institute for Innovation and Entrepreneurship, March 2018. Accessed August 29, 2018. https://brookfieldinstitute.ca/wp-content/uploads/BrookfieldInstitute_Understanding-the-Talent-Gap-1.pdf.

Turcotte, Martin. *Persons With Disabilities and Employment*. Ottawa: Statistics Canada, December 3, 2014. Accessed September 21, 2018. https://www150.statcan.gc.ca/n1/en/pub/75-006-x/2014001/article/14115-eng.pdf?st=C_9DAq3d.

World Economic Forum. *The Future of Jobs: Employment, Skills and Workforce Strategy for the Fourth Industrial Revolution*. Executive Summary, Geneva: WEF, January 2016. Accessed September 11, 2018. http://www3.weforum.org/docs/WEF_FOJ_Executive_Summary_Jobs.pdf.

Wyonch, Rosalie. *Risk and Readiness: The Impact of Automation on Provincial Labour Markets*. Toronto: C.D. Howe Institute, January 2018. Accessed August 27, 2018. https://www.cdhowe.org/sites/default/files/attachments/research_papers/mixed/Jan%2015%20Comm%20499%20Final_0.pdf.

Yuen, Philip. "The 7 Forces That Will Change the Way You Work."
Geneva: World Economic Forum, September 3, 2018. Accessed
September 11, 2018. [https://www.weforum.org/agenda/2018/09/
here-are-seven-ways-your-job-will-change-in-the-future](https://www.weforum.org/agenda/2018/09/here-are-seven-ways-your-job-will-change-in-the-future).



About The Conference Board of Canada

We are:

- The foremost independent, not-for-profit, applied research organization in Canada.
- Objective and non-partisan. We do not lobby for specific interests.
- Funded exclusively through the fees we charge for services to the private and public sectors.
- Experts in running conferences but also at conducting, publishing, and disseminating research; helping people network; developing individual leadership skills; and building organizational capacity.
- Specialists in economic trends, as well as organizational performance and public policy issues.
- Not a government department or agency, although we are often hired to provide services for all levels of government.
- Independent from, but affiliated with, The Conference Board, Inc. of New York, which serves nearly 2,000 companies in 60 nations and has offices in Brussels and Hong Kong.

Insights. Understanding. Impact.



255 Smyth Road, Ottawa ON
K1H 8M7 Canada
Tel. 613-526-3280
Fax 613-526-4857
Inquiries 1-866-711-2262
conferenceboard.ca



PRICE: Complimentary