

Signs of the Times:

Expert insights about employment in 2030

August 2019



A U T H O R S

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Please note that the insights shared in this report reflect overarching observations and high-level themes emerging from the project workshops, and do not capture every participant's insights. Efforts have been made to integrate feedback from workshop partners; however, if a participant or partner believes that any key insights are missing or inappropriately portrayed, please contact the report authors.

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Canada’s labour market is undergoing changes, but what does the future hold? With a range of technological, environmental, and political trends driving change, which ones should Canadians pay attention to most? *Signs of the Times: Expert insights about employment in 2030* offers a look at how a range of experts across Canada are thinking about the future of employment, as well as which trends they believe are most likely to create change. In doing so, this report aims to provide guidance to Canadian policy makers, educators, employers, students, and workers about what the future of Canada’s labour market may hold.

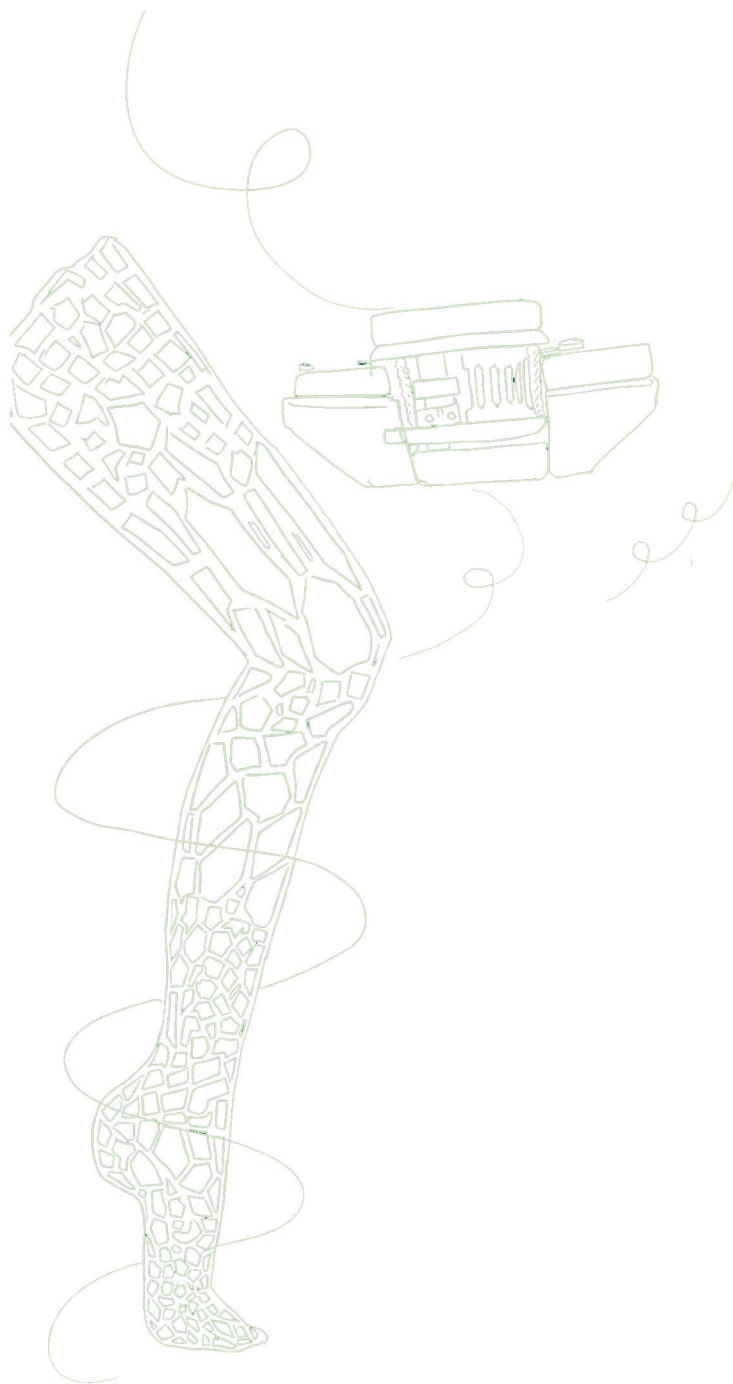
Signs of the Times is the second report to be released as part of the Brookfield Institute’s Employment in 2030 initiative. Building on previous work conducted by project partner [Nesta](#), Employment in 2030 uses futures research, expert workshops, and machine learning algorithms to project the skills most likely to be in demand in 2030 across Canada. The first phase of this

initiative resulted in *Turn and Face the Strange*, a report that outlines 31 broad trends with the potential to impact Canada’s labour market. This research was used to frame the next phase of the project: six workshops held across Canada, inviting a range of diverse experts to share how they expect select occupations might change in the next 10–15 years. Data from these workshops will inform the last phase of the project: data analysis using machine learning algorithms to project these impacts across the labour market, shedding light on the skills most likely to be in demand. The findings from this final phase will be shared in a third report, which is set for release in 2020.

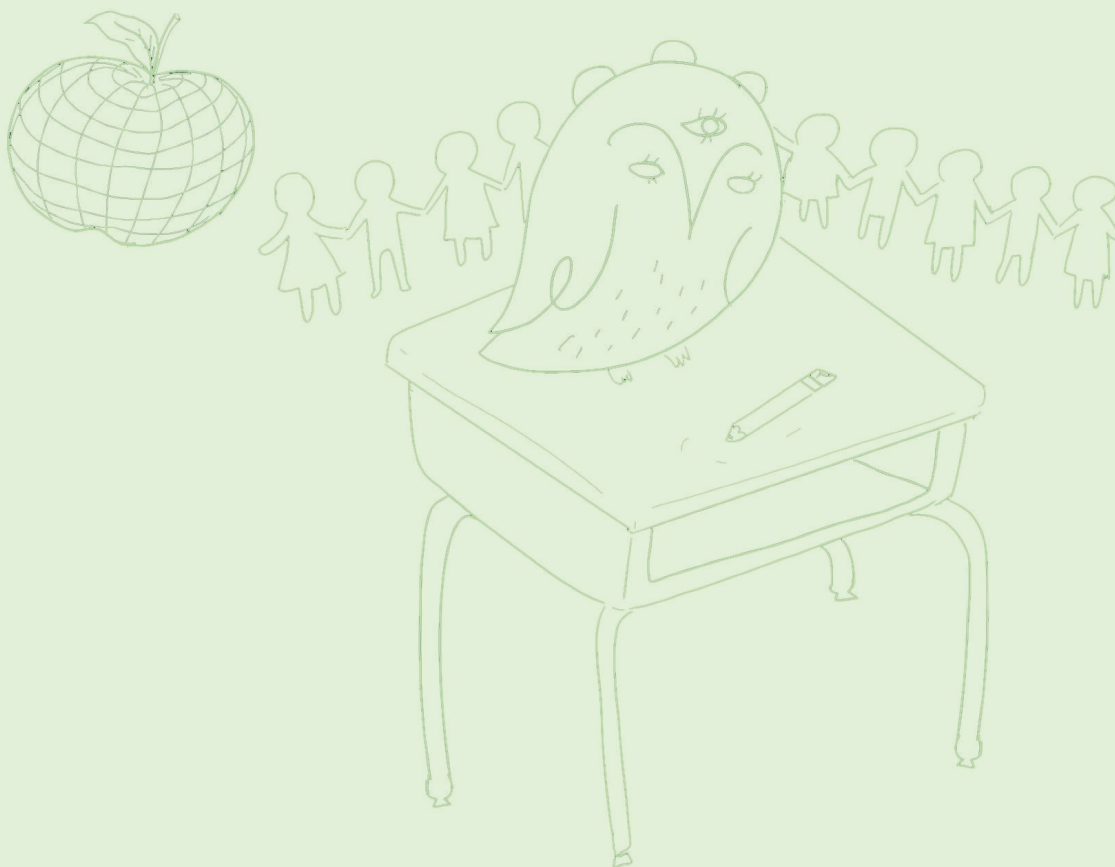
Signs of the Times outlines the insights gathered at the six expert workshops, as well as the unique workshop methodology designed specifically for this project and the occupations experts were asked to rate. It describes the key trends participants identified as most likely to create change for Canada’s labour market, as well as broader reflections observed in each region.

FINDINGS AT A GLANCE:

- + Workshops were held in Alberta, Ontario, Yukon, British Columbia, Quebec, and Newfoundland Labrador. It was critical to work with our local convening partners in each region to identify experts with broad labour market knowledge who could inform our data set.
- + Technological trends such as artificial intelligence and automation were identified by most experts as important, with high potential to create change. However, experts stressed that adoption of these new technologies would be slow and uneven across Canada. The differing level of familiarity that participants had with the state and reach of current technologies in each region seemed to reinforce this opinion.
- + Experts identified environmental sustainability trends, such as Resource scarcity, as growing in importance and likely to create more and more unexpected change for Canada's labour market.
- + Demographic trends, such as an aging population, will continue to drive change for health-related professions. Several experts also stressed that this trend would prompt an economic need for immigration.
- + The importance of the reconciliation process and safeguarding Indigenous rights was an important, recurring topic throughout the workshops. For example, several experts believe that judicial practices related to land and sovereignty issues would change in the future, particularly those with the ability to impact legal occupations.



INTRODUCTION



Will creativity be the most important skill for employability in Canada in 2030? Do all Canadians need to learn how to code? Should Canadian workers focus on building their soft skills? Questions like these are preoccupying the minds of many Canadians. Even still, Canada needs a holistic, actionable skills forecast. Policy makers, educators, employers, workers, and students lack the evidence needed to make educated decisions about the future. Understanding this, the Brookfield Institute’s *Employment in 2030* initiative seeks to identify the skills that might be most in demand by the year 2030 using a unique mix of foresight, expert workshops, and machine learning.

This report is the second to be released as part of *Employment in 2030* and is meant to provide a high-level overview of how experts believe employment may change in 10 to 15 years. *Signs of the Times* describes how six expert workshops were designed and executed to generate the data needed for a skills forecast, and outlines key insights gathered in each region. This report is based on facilitator observations and early summary data collected throughout the workshops. *Signs of the Times* is not a skills forecast—that will be made available in early 2020. However, we are sharing this work in advance of the final analysis to provide policy makers, educators, employers, workers, and students access to preliminary insights and important context for the forthcoming forecast.

PROJECT OVERVIEW



Employment in 2030 is supported by the Government of Canada’s Sectoral Initiative Program and the Max Bell Foundation, and builds on previous work conducted by project partner [Nesta](#), a leading innovation research foundation in the UK. Using a combination of foresight research, cross-country expert workshops, and machine learning methods to drive insights, this project aims to explore the future of occupations and skills in Canada, and their distribution across different geographies and demographic groups.

The final output of this study will be an actionable forecast of important skills for employment in 2030. It aims to support policy makers, education institutions, employers, students, and Canadian workers to make better-informed decisions for skills development and policy. The unique mix of quantitative and qualitative methods driving this forecast will provide outputs that look beyond the effects of automation or other technological changes; it will create insights into how a range of trends might impact the future of employment.

PHASE ONE

Turn and Face the Strange was the first report released as part of *Employment in 2030*. Drawing on foresight methodology, it describes 31 broad trends with the potential to impact employment in Canada. It builds on Nesta's 2017 report, *The Future of Skills: Trends impacting on US and UK employment in 2030*,¹ which outlined seven mega trends: technological change, globalization, demographic change, environmental sustainability, urbanisation, increasing inequality, and political uncertainty. Using strategic foresight research, *Turn and Face the Strange* extends this framework to explore 31 specific meso trends, ranging from mature to emerging or speculative.

PHASE TWO

Turn and Face the Strange provided the framework for the six expert workshops described in this report. A diverse mix of experts were invited to these workshops, organized to forecast how select occupations may change in 10 to 15 years based on both trends presented and participants' own knowledge of trends impacting employment. Throughout spring 2019, six workshops were held across Canada, in Alberta, British Columbia, Newfoundland and Labrador, Ontario, Quebec, and Yukon. In each region, we engaged local convening partners to co-host workshops, helping draw a range of experts from government, global consulting firms, the private sector, labour unions, service delivery organizations, and post-secondary institutions.

¹ Schneider, Philippe, Hasan Bakhshi, and Harry Armstrong. 2017. "The Future of Skills: Trends impacting on US and UK employment in 2030." [Nesta](https://www.nesta.org.uk/report/the-future-of-skills-trends-impacting-on-us-and-uk-employment-in-2030/). August 15, 2017. <https://www.nesta.org.uk/report/the-future-of-skills-trends-impacting-on-us-and-uk-employment-in-2030/> (accessed December 19, 2018)

The purpose of *Signs of the Times* is to share qualitative data gathered in this phase. It aims to help readers gain clearer sightlines into how experts forecast jobs are likely to change in the future, how these insights vary by region, and which trends were identified as driving the transitions.

PHASE THREE

Information collected from these six workshops provides the training data for a machine learning algorithm, which will help project employment changes across the entire labour market. This data will also allow us to identify which skills could be the most important for employment in 10 to 15 years. The results from this analysis will be published in the final report.

WORKSHOP METHODOLOGY



The following describes how the expert workshops were designed and provides a framework for the regional insights sections.

GOALS AND PRINCIPLES

The purpose of our workshops, and our main consideration in their design, was to obtain high quality occupational ratings where experts shared how employment in select occupations may change by the year 2030. These ratings will inform our machine learning model, which will then extend projections to all Canadian occupations.¹

In order to gather the necessary data, and guided by human-centred design principles, we created a day-long workshop that encouraged interaction, collaboration, and offered a great participant experience.

¹ The Canadian National Occupational Classification (NOC) taxonomy is comprised of 500 different occupations. Only 485 are used in this study due to lack of skills data and matching difficulties for certain unit groups (e.g. military occupations).

PARTICIPANT PROFILE

Our workshop participants were employed in a range of sectors, had exposure to broad labour market information and trends, were from diverse demographic and geographic backgrounds, and belonged to mid-to-senior level management. Since we had a wide range of occupations to rate, we did not seek participants whose experience with labour market information is occupation-specific. We looked for experts who were comfortable with making decisions under conditions of uncertainty and ambiguity, and who were open to participating in new research methods. Importantly, participants also needed to commit to attend a full day workshop.

Given our goal, design principles, and the innovative nature of the project, the workshop activities and facilitation guides were created knowing that participants might have limited knowledge of futures research or particular occupations.

DATA CRITERIA

The data extracted from the workshops had to meet various criteria to maximize its usefulness for the modelling stage of the project. To ensure that the ratings were comparable across and within workshops, experts had to be exposed to the same information, and answer the same questions using the same methods. Additionally, while discussion and collaboration were key components of the day, it was important that all participants submitted individual ratings for each occupation.

In the rating activity, experts assessed 20 occupations presented at the most granular level of information available in Canada.² We chose these occupations in two stages. First, 15 benchmark occupations were selected to represent the range of skills, abilities, and knowledge attributes present throughout national occupations. Participants in all workshops labelled the same benchmark occupations, which will allow us to examine potential regional differences in ratings and opinions in the next phase.

In addition, we selected five regional occupations for each workshop (Figure 1). For this stage, we prioritized explicitly rating nationally and regionally important occupations, and harnessing the regional expertise of our participants. This set of occupations contains those that, based on regional data, were most important in terms of employment levels, occupational concentration, and relative regional dependence.³ The final rated occupations are in (Figure 2), and ([Farmers, Clerks, and Engineers: A look at how we selected the occupations informing our forecast of employment in 2030](#)) provides a more detailed account of the selection process.

2 US O*NET was chosen as the preferred skills taxonomy for this project, and US occupations were then crosswalked to match National Occupational Classification codes at the four-digit level.

3 Relative regional dependence is a ratio of the regional employment share over the national employment share of a given occupation. When an occupation presents a high ratio in a region, it suggests that geography is relatively more dependent on the occupation for employment than the country as a whole.

Figure 1: Regional Occupations⁴

Code	Occupation
Alberta, Manitoba, Saskatchewan	
0821	Managers in agriculture
8431	General farm workers
7312	Heavy-duty equipment mechanics
9232	Central control and process operators, petroleum, gas, and chemical processing
8232	Oil and gas well drillers, servicers, testers, and related workers
Ontario	
6232	Real estate agents and salespersons
4165	Health policy researchers, consultants, and program officers
0631	Restaurant and food service managers
6221	Technical sales specialists - wholesale trade
4112	Lawyers and Quebec notaries
Territories	
2271	Air pilots, flight engineers, and flying instructors
4422	Correctional service officers
6523	Airline ticket and service agents
7534	Air transport ramp attendants
7271	Carpenters
British Columbia	
6321	Chefs
1311	Accounting technicians and bookkeepers
5241	Graphic designers and illustrators
7294	Painters and decorators (except interior decorators)
0632	Accommodation service managers
Quebec	
7514	Delivery and courier service drivers
6731	Light duty cleaners
1521	Shippers and receivers
6322	Cooks
6622	Store shelf stockers, clerks, and order fillers
Atlantic	
8262	Fishermen/women
9463	Fish and seafood plant workers
3012	Registered nurses and registered psychiatric nurses
7252	Steamfitters, pipefitters, and sprinkler system installers
3234	Paramedical occupations

4 Workshops in this study were limited to one per region.

Figure 2: Benchmark Occupations

Code	Occupation
0013	Senior managers—financial, communications, and other business services
0111	Financial managers
1416	Court clerks
2141	Industrial and manufacturing engineers
2223	Forestry technologists and technicians
2281	Computer network technicians
3234	Paramedical occupations
4215	Instructors of persons with disabilities
6722	Operators and attendants in amusement, recreation, and sport
7333	Electrical mechanics
8231	Underground production and development miners
9212	Supervisors, petroleum, gas and chemical processing, and utilities
9422	Plastics processing machine operators
9532	Furniture and fixture assemblers and inspectors
9617	Labourers in food, beverage, and associated products processing

PROTOTYPING AND TESTING

Prototype testing was essential in the evolution of each of the workshop activities, given the need to remain consistent across workshops. Components such as the introduction of futures research, the survey questions, the survey method, and the information presented for each of the occupations evolved through four workshop tests. The earliest workshop prototype was tested in November 2018, first with colleagues at BII+E and then with Wendy Schultz and Nesta partners. Schultz, as a foresight expert and facilitator of Nesta’s workshops, provided significant feedback and advice on activities involving the trends material and workshop flow, while Nesta partners provided detailed guidance on the rating activities. Some workshop activities, such as the generation of new jobs and survey questions, were inspired by the original Nesta workshops. Based on everyone’s respective feedback, a second workshop

prototype was created, and tested in January and February 2019, with a mix of external partners who were close to the participant profile and BII+E employees. Two of our blogs, [How to design a workshop for the future of employment](#) and [Farmers, Clerks, and Engineers](#) provide more detail on our final workshop materials, activities, and design process.

THE FINAL AGENDA

Pre-workshop materials: Experts were provided the trends research report, as well as a summary that set the context, objectives, agenda, and expectations of the workshop. Participants were also assigned a trend from *Turn and Face the Strange* to prepare.

Gallery walk: As the first introduction of the day to the 31 trends identified in *Turn and Face the Strange*, participants, conveners, and BII+E facilitators did a short introduction of an assigned trend. Each presenter was encouraged to mention their own experience and opinions related to their trend.

(See pages 11–14 for a review of the 31 trends featured in *Turn and Face the Strange*.)

Introductions, context setting, and labour market brief: The Brookfield Institute, the Employment in 2030 project, and the objectives of the day were introduced to participants. In addition, we presented a brief overview of the state of the Canadian labour market to ground the insights and discussions of the day.

Jobs of the Future—Part I: Jobs of the Future is a foresight game designed specifically for this project, which encouraged participants to interact with the trends introduced in *Turn and Face the Strange*, examine tensions, and explore potential futures of the labour market. As part of this game, participants also created new potential jobs for 2030. This thought exercise prepared experts for the afternoon’s rating activity.⁴

4 All the game materials are available for download, and more information is provided in our [blog post](#)

Figure 3: Jobs of the Future game



Occupation stations: Facilitators guided small participant groups through 20 science-fair-style stations, which presented information on the 20 occupations selected for rating in each region. Content at each station included a description of an occupation, historical and projected employment data to anchor participant analysis, as well as main sectors of employment to provide links to industrial trends and important skills.

While at the station, each participant submitted

a survey card (Figure 5). The answers collected from participants, specifically the data for the second and third questions, will inform the machine learning model and drive forecasts for all remaining occupations.

Jobs of the Future—Part II: After compiling the list of new jobs participants created in Part I, they voted on their favourites in Part II. Selection was split into two categories: jobs that experts thought most likely to exist or grow by 2030, and the crowd favourites. A sample of these selections are shared throughout this report. They provide some insight into the types of jobs experts believed to be possible in the future.

Figure 4: Occupation Station

Figure 5: Survey Card



Participant ID: 03 - 01
Occupation: Financial managers

- List up to 5 trends that will affect the number of individuals employed in this occupation. Circle the direction of their net effect:

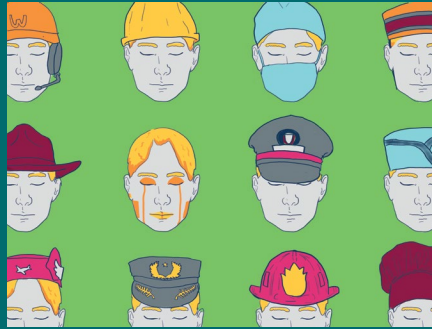
_____	↑	↓
_____	↑	↓
_____	↑	↓
_____	↑	↓
_____	↑	↓
- In 2030, there will be **more / the same / fewer** workers in this occupation.
- In 2030, this occupation's share of total employment in Canada will:

<input type="checkbox"/>	Increase
<input type="checkbox"/>	Remain constant
<input type="checkbox"/>	Decrease
- How comfortable are you with your answer?
1 - 2 - 3 - 4 - 5 - 6 - 7 - 8 - 9 - 10 (Most Comfortable)

31 Trends

from Turn and Face the Strange, a BII+E report released in March, 2019

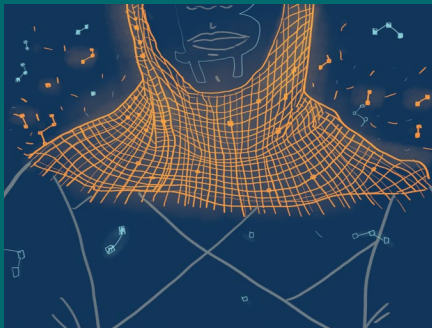
TECHNOLOGICAL CHANGE



AI EVERYTHING: AI may impact and potentially disrupt every industry.



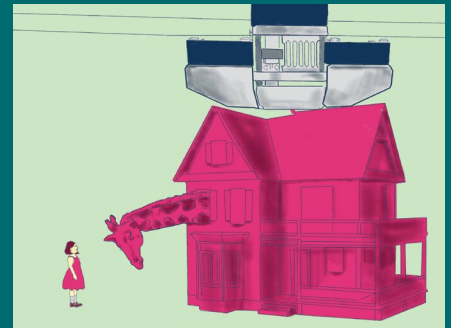
VR + AR EXPERIENCES: Virtual and Augmented Reality may transform the way Canadians engage with a range of experiences, from training to gaming.



BLOCKCHAIN: Blockchain adoption may change the security and authenticity of important transactions including banking, land rights, high value goods, insurance and voting.



DIGITAL DETOX: Finding the cost of digital connectedness too high, Canadians are making deliberate decisions to unplug from technology to achieve a healthier life balance.



3D PRINTING: 3D printing is gearing up to change the way we produce and consume goods in the future.



WE ARE FAMGA: Facebook, Amazon, Microsoft, Google, Apple (FAMGA) are redefining the technology industry and dominating multiple markets, leaving limited space for others.



DIGITAL IDENTITY: Information about us and our families is being used to create digital identities.



HUMANS, AUGMENTED: Brain enhancements may elevate human capabilities.



TECHNOLOGICAL FEAR: The pervasiveness of our digital connections is leading to deep fear and anxiety about technology.



RIGHTS OF AI: AI may transition from being understood as software to being considered beings, therefore achieving a new status and basic rights.



CREATIVE AI: Creative AI has the potential to automate creative tasks typically deemed automation-resistant.

GLOBALIZATION



TECH TALENT IMMIGRATION: Canada is using creative mechanisms to address tech talent shortages.

DEMOGRAPHIC CHANGE



WORKING RETIREMENT: Seniors may meld work and retirement well into their eighties and nineties.



CONNECTED BUT LONELY: Mental illness may become even more widespread, alongside increased technological connections.



LIFELONG LEARNING: Learning never stops.



WORK + LIFE INTEGRATION: Our personal and professional lives are melding, erasing the distinction between work and leisure hours.



MAINSTREAM INCLUSIVE DESIGN: Understanding that one size does not fit all, inclusive design may create a new market of opportunities.

ENVIRONMENTAL SUSTAINABILITY



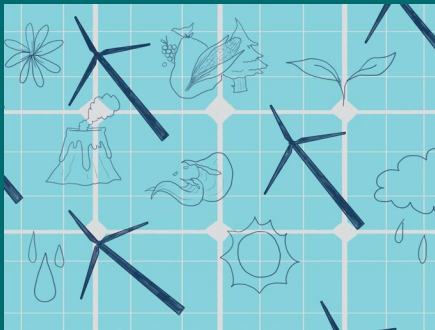
RESOURCE SCARCITY: Clean air, water, and sand may all become scarce and extremely valuable resources.



WILDFIRES, FLOODING + MUDSLIDES: Climate change may increase the instances of wildfires, floods and mudslides in Canada.



CLIMATE REFUGEES: Canada may see an influx of refugees due to major climate change disruptions in the rest of the world.



ALTERNATIVE ENERGY: Experimental and sustainable energy sources could provide abundant, affordable energy for all.

URBANIZATION



SUBURBAN BOOM: Canada's suburban areas are growing faster than the overall population.

INCREASING INEQUALITY



DISAPPEARING MIDDLE CLASS: The middle class may be disappearing and overstretched by debt, increasing the polarization between rich and poor.



REBALANCING GENDER EQUALITY: The rebalancing of gender equality could disrupt private and public institutions.



PERSONAL DATA OWNERSHIP: Concerns over personal data may create new ownership and revenue models.

INEQUALITY continued —



DECLINE OF CAPITALISM: Millennials may push for a new economic system to replace capitalism.

POLITICAL UNCERTAINTY —



INTERNATIONAL TENSIONS: New sources of international tensions may drive investment in security, including security applications of AI.

OTHER



ENTREPRENEURIAL SPIRIT: Entrepreneurship-related work and the entrepreneurial spirit may become the dominant career path with many Canadians creating their own opportunities rather than committing to a single employer.



MANDATORY CREATIVITY: Creativity could become critical for all Canadians, not just for the arts and design community.

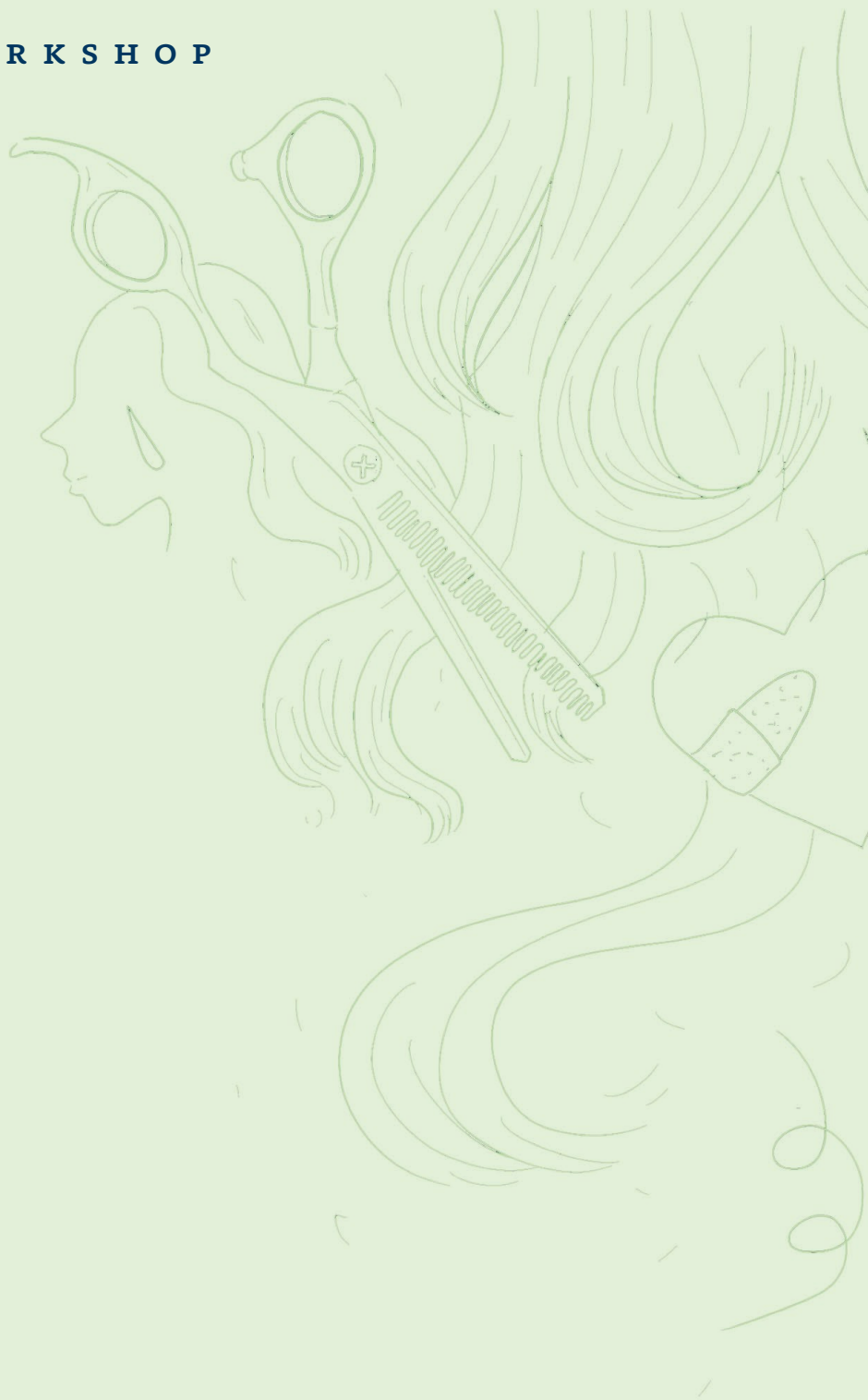


EDUCATION REIMAGINED: Work is changing, driving demand for learning how to learn instead of memorizing information, paving the way for new models of education for K-12 learners.



CANNABIS ECONOMY: Canada becomes second nation in the world to legalize marijuana, creating immense new market opportunities.

REGIONAL WORKSHOP INSIGHTS



In the following section, we present some of the principal takeaways gathered at each of the six cross-country workshops. For each region, we highlight statistics related to the profiles of our expert participants, including their sector of work, their overall satisfaction with the workshop, as well as the main themes they discussed during the day with our facilitators.

With this exercise, we aim to identify some of the differences and similarities in the priorities, challenges, and overall state of each region when it comes to the future of work.



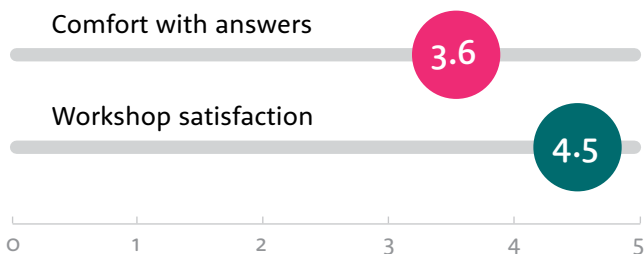
Jobs of the future: Cannabis Sommelier

ALBERTA REGIONAL INSIGHTS

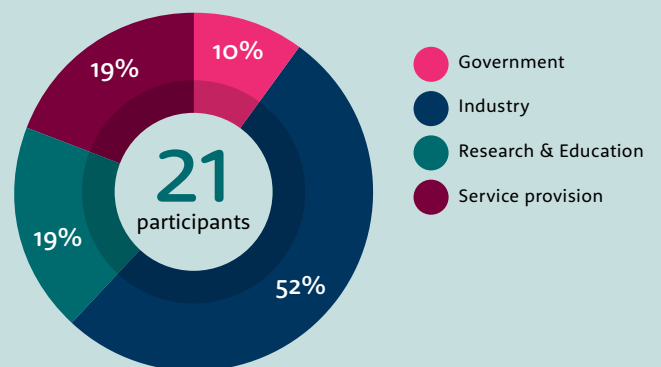
Convening partner: Canada West Foundation

Workshop date: March 20, 2019

Workshop ratings:



Represented groups: Experts in Calgary*



* This breakdown is based on the institution with which participants were associated at the time of registration.

TOP 5 MOST CITED TRENDS

1. **AI Everything**
2. **Resource Scarcity**
3. **Alternative Energy**
4. **AR/VR Experiences**
5. **3D Printing**

JOBS OF THE FUTURE

Voted Most Probable:

Medical Data Analysts: Analyzing patient health data to support doctors

Petroleum Data Miners: Providing analysis of petroleum data to repurpose or utilize geographical or well data

Career Skills Mapping + Talent Relevancy Experts: Supporting Canadians in shifting between careers, while assessing skills gaps and identifying relevant upskilling activities

Crowd Favourites:

Cannabis Sommeliers: Promoting food and wine pairings with cannabis products

Job Physicians: Providing annual learning check-ups to support lifelong learning

Mobile Human Parts Technician: Proactively replacing human body parts using 3D printing to maintain optimal health

KEY TRENDS

Workshop participants were keenly aware of environmental sustainability trends, including: Resource Scarcity; Wildfires, Flooding, Mudslides; and Alternative Energy. These trends were connected regularly to occupations such as plastics processing, managers in agriculture, and electrical engineers. For example, some participants felt that forestry occupations may be negatively impacted by Wildfires and Resource Scarcity, but demand could increase given the need to take care of the environment.

Technology trends, especially AI, VR/AR experiences, and 3D Printing also dominated conversations. They were often linked to impacting receptionists, bus drivers, plastics processing, and chemical operators. While the automating potential of technology was top of mind for many, participants were skeptical about overall adoption rates. Instead, they noted how new technologies may change instead of displace existing jobs. For instance, one participant noted that the job of family doctors may become augmented by new AI diagnostic tools. This could result in the division of existing tasks across multiple occupations, with nurses or pharmacists carrying out most patient communication, while doctors focus on interpreting and making judgements based on AI diagnostics.

SPOTLIGHT ON REGIONAL OCCUPATIONS

The regional occupations selected for rating in Alberta were related to the oil and gas sector (including **oil and gas well drillers, servicers, testers and related workers, and central control and process operators in petroleum, gas and chemical processing**), as well as the agricultural sector (including **managers in agriculture, heavy duty mechanics, and general farm workers**). Participants were incredibly knowledgeable about these occupations and were able to provide detailed assessments of how they might change. Many noted how the trends of Resource Scarcity, AI Everything, and Alternative Energy would drive change in these occupations.

REFLECTIONS

Throughout this workshop, political uncertainty and fiscal conservatism were key themes prevailing over several conversations, specifically in reference to jobs in the oil and gas sector. Despite a focus on a 10 to 15 year horizon, this was likely influenced by Alberta's upcoming provincial election, which took place less than a month after the workshop, as well as ongoing national debates about pipelines. Despite uncertainty about the future of Alberta's government, and concern over high unemployment rates, typically the overall tone among participants was cautiously optimistic about what the future might hold for employment in Alberta.



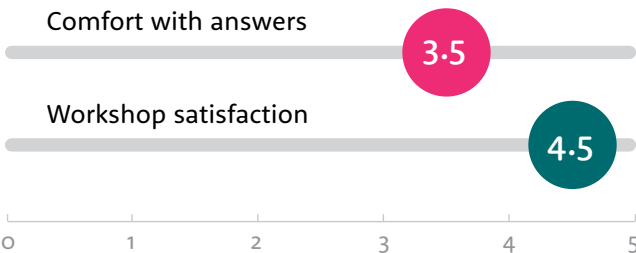
Jobs of the future: AI Ethicists

ONTARIO
REGIONAL INSIGHTS

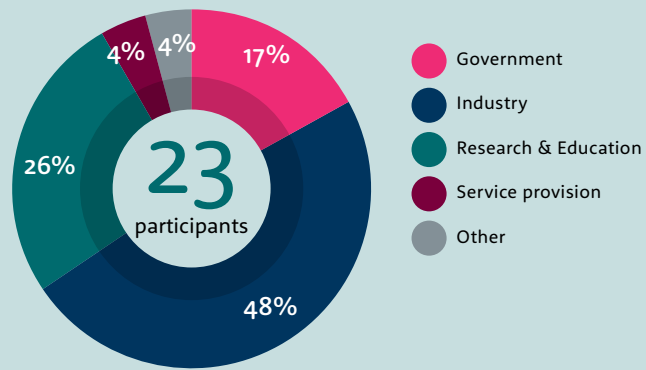
Convening partner: DMZ Sandbox
at Ryerson University

Workshop date: March 26, 2019

Workshop ratings:



Represented groups: Experts in Toronto*



* This breakdown is based on the institution with which participants were associated at the time of registration.

TOP 5 MOST CITED TRENDS

1. **AI Everything**
2. **Resource Scarcity**
3. **Disappearing Middle Class**
4. **3D Printing**
5. **Blockchain**

JOBS OF THE FUTURE

Voted Most Probable:

Personal Data Usage Specialists: Supporting individuals in monetizing their personal data

Personal Health Navigators: Supporting people in understanding their personal health data

Personal Compensation Consultants: Advising on personal benefits across employers when clients have multiple employers

Crowd Favourites:

AI Ethicists: Advising on the ethical and moral impacts of AI algorithms

Resource/Energy Diplomats: Brokering resource deals during times of international conflict

Mental Health Dog Consultants: Helping take care of support dogs when owners are unable to do so

Cannabis Export Consultant: Brokering the export of Canadian-grown cannabis

KEY TRENDS

Technology-related trends featured prominently throughout the Toronto workshop. Participants were very knowledgeable about how a range of new technologies might impact occupations such as underground miners, manufacturing engineers, and instructors of persons with disabilities. Additionally, trends related to increasing inequality, specifically the Disappearing Middle Class trend, were raised by several participants. For example, they could create change for real estate agents due to a decrease in purchasing real estate, and for restaurant managers given a decrease in disposable income.

Fiscal conservatism and political uncertainty were regularly identified by participants as driving possible change to several publicly funded occupations. A group of participants felt that political pressures and fiscal conservatism would create downward pressure on demand for the occupation of medical administrative assistants. At the same time, these experts felt that the trend of Connected but Lonely would create a greater need for this role because it provides face-to-face customer service.

SPOTLIGHT ON REGIONAL OCCUPATIONS

Ontario regional occupations included **real estate agents and salespersons, health policy researchers, consultants and program officers, restaurant and food service managers, technical sales specialists, and lawyers**. Participants were very knowledgeable about these professions. Several remarked how future income levels would significantly impact how many restaurant managers or real estate agents were needed. In discussing health policy researchers, participants made connections to Canada's opioid crisis. They noted that this should create increased need for this occupation in the medium term, while the trend of political uncertainty would limit the ability to meet this demand.

REFLECTIONS

Throughout the Ontario workshop, trends related to increasing inequality regularly surfaced, with considerable emphasis on scrutinizing which societal groups might benefit most in the future. In general, there was a stronger focus on considering workers and the impact changes could have on their quality of life. While technology trends were discussed in relation to almost every occupation, barriers to adoption, including aspects of policy (e.g. government funding) and workers' rights (e.g. unionisation) were often mentioned alongside them in the context of technological change. In general, participants were very knowledgeable about technology-related trends, and saw them as creating the most significant change.



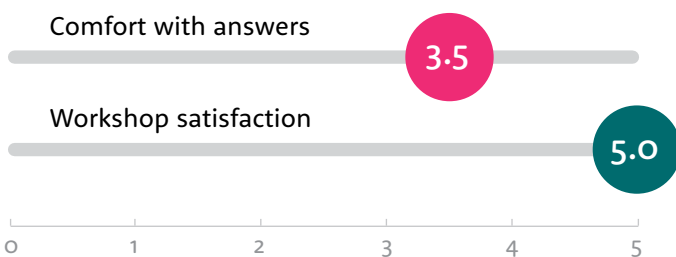
Jobs of the future: VR Educator

YUKON
REGIONAL INSIGHTS

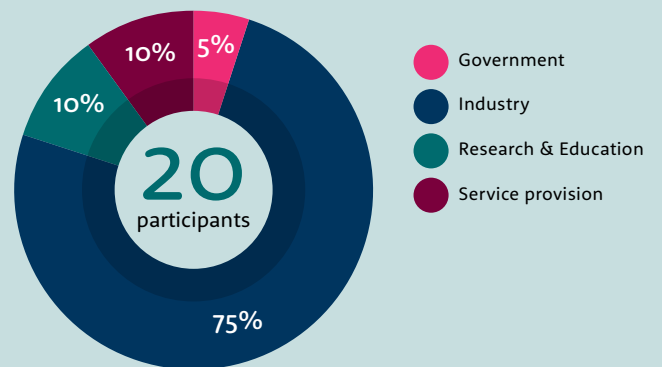
Convening partner: Yukon College

Workshop date: April 30, 2019

Workshop ratings:



Represented groups: Experts in Whitehorse*



* This breakdown is based on the institution with which participants were associated at the time of registration.

TOP 5 MOST CITED TRENDS

1. **AI Everything**
2. **Resource Scarcity**
3. **Disappearing Middle Class**
4. **Alternative Energy**
5. **AR/VR Experiences**

JOBS OF THE FUTURE

Voted Most Probable:

Electric/Autonomous Vehicle Technicians: Maintaining and repairing electric and autonomous vehicles for privately and publicly owned fleets

Identity Designer: Analyzing peoples' aspirations to design relevant digital identities

VR Educator: Providing online educational content using virtual reality

Crowd Favourites:

Consumption Reduction Consultants: Helping businesses, governments, and individuals understand best practices for reducing energy and natural resource consumption

AI Monitor: Monitoring AI functions of autonomous vehicles to ensure safety and successful outcomes

KEY TRENDS

A broad range of trends were discussed throughout this workshop, with an emphasis on those related to environmental sustainability and technological change. While these were often discussed as driving employment change, participants also regularly noted the social benefits that could result from the trends. For example, the demographic trend of Work + Life Integration came up in discussions more commonly than in other workshops. Participants felt that climate change would increase the need for forestry technologists and technicians, but that it may be a good thing since working in forestry can be associated with a high quality of life.

Several participants felt that a trend related to Indigenous land rights and cultural resurgence was missing from *Turn and Face the Strange*, and from the workshop framing. This gap became evident in discussing occupations such as court clerks, which participants felt would be impacted by a growing focus on Indigenous dispute resolution. Similar observations were made in relation to the regional occupation of correctional service officers.

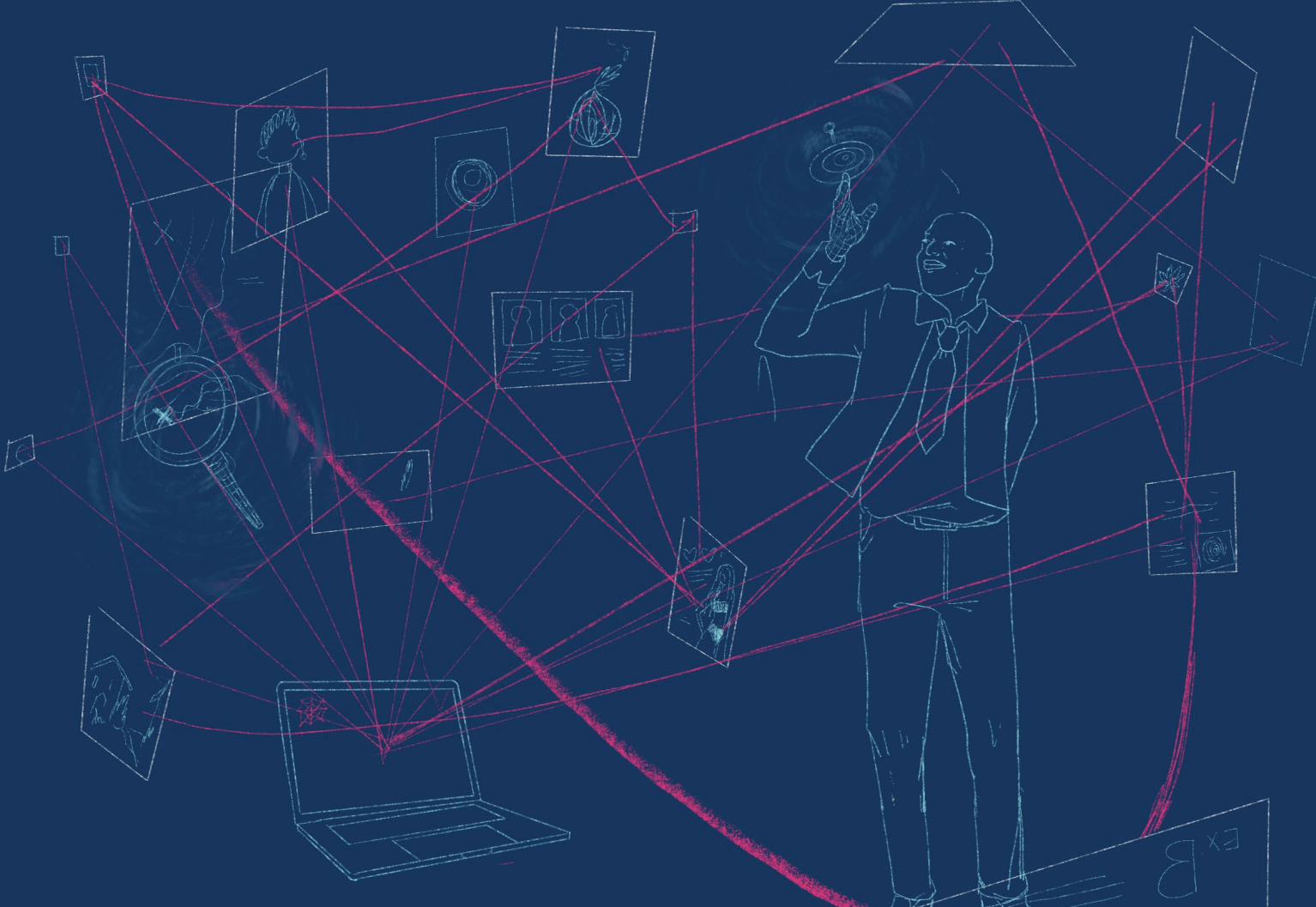
While automation was commonly discussed in relation to most occupations, the focus in this workshop was generally not on broader technological trends. Several participants were less aware of currently available technologies, or of how they are already impacting occupations in other regions.

SPOTLIGHT ON REGIONAL OCCUPATIONS

Air pilots, flight engineers and flying instructors, correctional service officers, airline ticket and service agents, air transport ramp attendants, and carpenters were the five regional occupations rated during this workshop. The focus on air related occupations was of no surprise to participants, given the common use of air transportation in the region. In most cases, participants felt these occupations would be impacted by the AI Everything and Disappearing Middle Class trends in the coming 10 to 15 years. In general, participants welcomed the prospect of labour automation in these fields, feeling that jobs may be lost but that this would allow for a focus on other specialized tasks. For instance, one participant noted that while there would always be tasks that need humans in mining occupations, mines would likely be safer with more automation, which would increase overall quality of life.

REFLECTIONS

Throughout the day it became evident that participants valued work-life balance, which was the reason many of them had chosen to live in the region. They conveyed that this, paired with high job vacancy rates, meant that workers in the region tend to have more flexibility in the occupations they pursue. As such, the trend of Entrepreneurial Spirit came up regularly, as participants highlighted the opportunity for workers in the region to reinvent themselves regularly to obtain the most attractive jobs—ones that would support work-life balance.



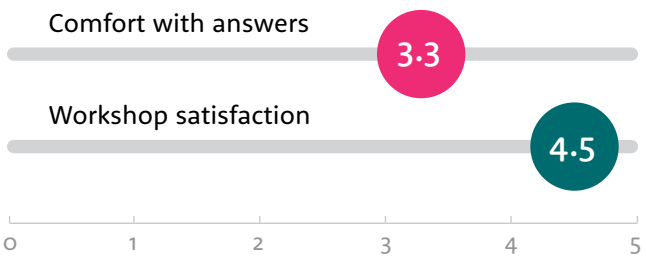
Jobs of the future: Dark Web Detective

**BRITISH COLUMBIA
REGIONAL INSIGHTS**

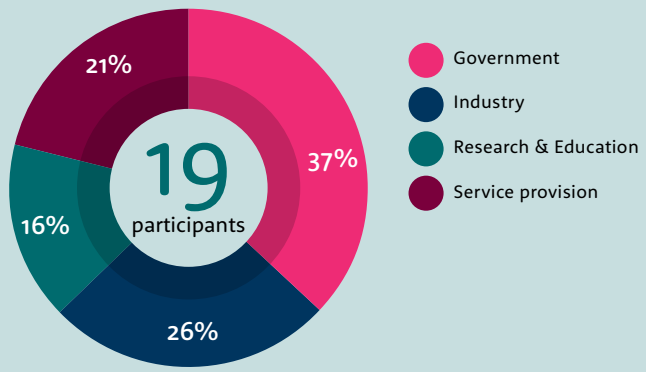
Convening partner: SFU Public Square

Workshop date: May 3, 2019

Workshop ratings:



Represented groups: Experts in Vancouver*



* This breakdown is based on the institution with which participants were associated at the time of registration.

TOP 5 MOST CITED TRENDS

1. **AI Everything**
2. **Entrepreneurial Spirit**
3. **Resource Scarcity**
4. **AR/VR**
5. **Automation**

JOBS OF THE FUTURE

Voted Most Probable:

Transportation Concierge: Providing customer service for public transportation autonomous vehicles

Augmented Receptionist: Leveraging brain enhancements to access logistical data, paired with human customer service and support

Gig Administrator: Providing administrative support for multiple gig workers

AI Rights Lawyer: Providing legal representation in AI rights cases

Crowd Favourites:

Digital Identity Guardians: Tracking and monitoring instances of personal data misuse or unauthorized access

Digital Health Advocate Designer: Alerting people to health symptoms they may not be aware of through ongoing analysis of longitudinal personal data sets

Dark Web Detective: Providing private investigative services specializing in the dark web

KEY TRENDS

The majority of conversations focused on trends related to technological change. In particular, participants identified opportunities for the trend Creative AI to impact graphic design, changing the role of current designers. The trend 3D Printing was identified as potentially creating more need for plastics operators. In general, participants felt that the potential impacts of automation were overstated, and that occupations most likely to be impacted (such as mining) had already been affected. For example, participants felt that automation was unlikely to impact occupations such as bookkeeping given the cost associated with adoption of new technologies.

The weak signal Humans Augmented came up regularly as a potential disruptor in relation to occupations such as instructors of persons with disabilities. Some participants felt that brain enhancements may increase the capabilities of differently-abled individuals, reducing the need for Braille or sign language instructors. Others, however, felt that this occupation would continue to be in demand, but that its tasks would evolve to include providing recommendations of supportive technology.

The trend of Entrepreneurial Spirit was discussed regularly in relation to a broad range of occupations, including accountants, hairstylists and barbers, and graphic designers. In most cases, participants felt that entrepreneurialism would result in more individuals entering these occupations.

SPOTLIGHT ON REGIONAL OCCUPATIONS

In British Columbia, the regional occupations selected for rating were **chefs, graphic designers and illustrators, accounting technicians and bookkeepers, painters and decorators, and accommodation service managers**. As with other workshops, participants were very familiar with these occupations. While technological trends were discussed, participants believed that most of these occupations would not be negatively impacted by 2030.

REFLECTIONS

Participants at this workshop approached discussions through a social lens, focusing on how life in Canada would be impacted by the trends presented. Building within this theme, several participants noted early on that there was a trend related to Indigenous rights missing, which left a gap in the conversation.

Another recurring theme was complexity. Participants discussed how various systems would need to evolve in line with technological changes. Several experts noted that legal frameworks, regulations, and systems in general would need to shift, and that there would be a period requiring institutions to take risks in order to keep pace with changes. This focus on the importance of adaptability was common among participants, who were in general very comfortable thinking about the future and the inherent ambiguity involved.



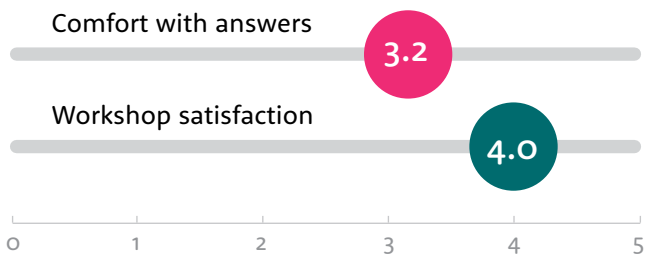
Jobs of the future: Therapist Hairdresser

QUEBEC
REGIONAL INSIGHTS

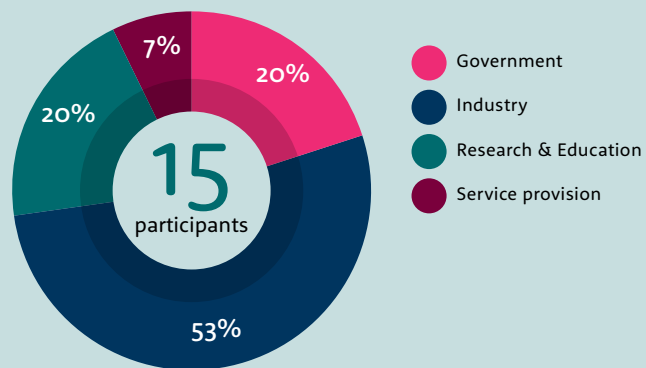
Convening partner: Percolab*

Workshop date: May 9, 2019

Workshop ratings:



Represented groups: Experts in Montreal*



* This breakdown is based on the institution with which participants were associated at the time of registration.

TOP 5 MOST CITED TRENDS

1. **AI Everything**
2. **3D Printing**
3. **Blockchain**
4. **Resource Scarcity**
5. **Disappearing Middle Class**

JOBS OF THE FUTURE

Voted Most Probable:

Digital Identity Protector: Protecting the digital identity of citizens at various levels of government

Family Medicine Online Support Agent: Responding to low-risk medical inquiries, offering health advice, and referring patients to appropriate doctors

Green Energy Engineer: Developing materials and technology linked to green energy

Crowd Favourites:

Wisdom Services: Offering social guidance in mediation, mindfulness, and non-violent communication in an increasingly technology-based world, based in schools

Mobility Facilitator: Fulfilling clients' mobility needs, and identifying and addressing safety concerns in certain situations (e.g. crowds and transportation)

Welcome Experience Designer: Creating meaningful welcome experiences for clients and guests, merging digital and human components

Therapist Hairdresser: Specializing in helping older clients, those with mental disorders, and those with chronic and terminal illnesses improve their mental and physical self-image

KEY TRENDS

There was a focus around automation and disruptive technologies throughout the workshop. AI Everything and automation of certain tasks were often top of mind for participants, yet there was a general view that these trends would enhance jobs rather than replace them. Experts emphasized the potential of service amplification, perhaps including coaching, counselling, and human connection, particularly for occupations such as medical administrative assistants or receptionists.

Participants also considered technological changes outside of automation. They saw advances in 3D Printing as potentially transformative for a wide variety of occupations. For cooks, resourcing and job requirements might change with organic and food 3D printing. For Industrial engineers and furniture assemblers, increased availability of 3D printing could change the range of their potential products and inputs. Experts also considered Blockchain as potentially expanding the scope of work within occupations dealing with private data, including medical administrative assistants, industrial engineers, and financial managers.

SPOTLIGHT ON REGIONAL OCCUPATIONS

Quebec's regional occupations included: **delivery and courier service drivers; light-duty cleaners; shippers and receivers; store-shelf stockers, clerks, and order fillers;** and **cooks**. Notably, discussions focused on demographic change such as population aging and changing generational preferences, as well as the impacts of disruptive technologies. The trend We are FAMGA, which highlights the changing and increasing influence of Facebook, Apple, Microsoft, Google, and Amazon on the labour market, was often a starting point for participants to explore the continuing transformation of the nature of work and employment in these occupations.

REFLECTIONS

Participants in Quebec had high-level engagement with the trends from *Turn and Face the Strange*. Most of the discussions included aspects of technological change, and there seemed to be a lower focus on environmental and natural resources trends compared to other regions. In general, facilitators identified a tendency to believe that the Canadian labour market will change gradually rather than rapidly over the next 15 years, as participants gave countertrends significant weight. While discussion of nuance, tension, and interaction, as well as critical thinking about trends, were features in all workshops, they were particularly strong in Quebec.



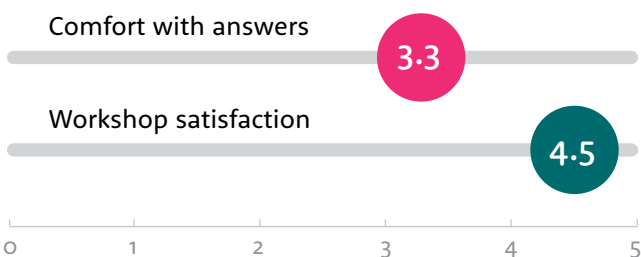
Jobs of the future: Virtual Stylist

NEWFOUNDLAND REGIONAL INSIGHTS

Convening partner: Newfoundland and Labrador Workforce Innovation Centre at College of the North Atlantic

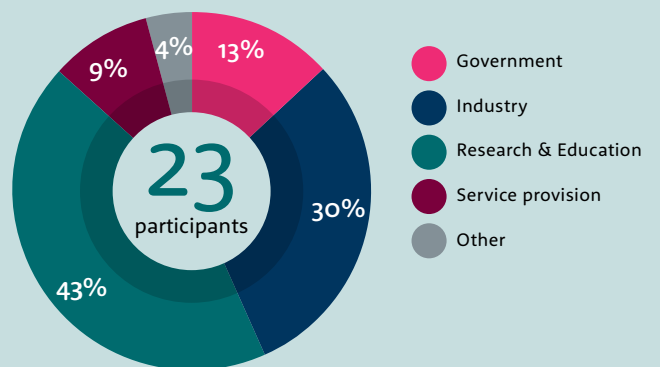
Workshop date: May 13, 2019

Workshop ratings:



SIGNS OF THE TIMES

Represented groups: Experts in St. John's*



* This breakdown is based on the institution with which participants were associated at the time of registration.

TOP 5 MOST CITED TRENDS

1. **AI Everything**
2. **Resource Scarcity**
3. **Aging Population**
4. **Working Retirement**
5. **AR/VR**

JOBBS OF THE FUTURE

Voted Most Probable:

VR Doctor: Providing virtual appointments and patient diagnoses using virtual reality

Automation Tech: Monitoring operations of automated systems across sectors

Work-life Consultant: Working with companies and individuals to help maintain employees' work-life balance

Crowd Favourites:

Augmentation Specialist: Supporting Canadians to adopt brain enhancements to suit their career ambitions

Personal Data Bodyguards: Protecting clients' personal data against cyber-hacking and corporate/government security

Virtual Stylists: Providing hair, clothing, and home design advice virtually based on information submitted

Hair B & B: Providing on-demand hair and salon services using digital platforms

KEY TRENDS

While diverse trends were discussed throughout the day, conversations largely focused on demographic trends. Immigration, aging populations, Working Retirement, and Lifelong Learning were commonly discussed in relation to regional occupations. In many cases, participants felt that there could be shortages of labour supply and that, as workers retire, there may be trouble filling job vacancies. Related to this, participants noted that globalization has led to jobs being relocated outside of Canada, a trend they felt would continue well into 2030.

While it was discussed less during the rating activity, the trend Digital Detox came up numerous times throughout the morning game activity. Several participants talked about the quality of life in Newfoundland and felt it could be leveraged to attract immigrants to the region. Some also identified significant opportunities with technology-related trends such as VR/AR experiences, noting they could allow workers in Newfoundland to participate remotely in jobs based in other parts of the country. As an example, one participant noted that every small town would need a car mechanic and identified the potential of VR to enable mechanics to fix cars remotely.

One participant commented that the report was missing a trend related to organized labour. A few participants felt the trends presented in *Turn and Face the Strange* were less relevant to their region than other parts of the country. Others disagreed, noting the usefulness of considering a range of possible changes on the horizon.

SPOTLIGHT ON REGIONAL OCCUPATIONS

Regional occupations for this workshop included: **fishermen and fisherwomen; fish and seafood plant workers; registered nurses and registered psychiatric nurses; steamfitters, pipefitters, and sprinkler system installers; and paramedical occupations.** In discussing the occupations related to fish and seafood, several participants noted the challenge of attracting younger talent to the sector. Some participants felt that nursing and paramedical occupations were struggling to meet labour demands and that this would continue into 2030. One participant, however, felt that there were already too many registered nurses, and that government funding would need to be reduced to balance fiscal pressures.

REFLECTIONS

This workshop was held less than one week in advance of Newfoundland and Labrador's provincial election. As a result, many government representatives were unable to attend and there was a notable tension during discussions related to political uncertainty. The political tension also meant that occupations reliant on government funding (such as nurses, steamfitters, and other medical professions), were challenging for participants to rate. In general, participants at this workshop were observed as being less comfortable talking about the future in comparison to other workshops.

This section summarizes a set of high-level observations across all six workshops. These insights are meant to help shed light on how experts are thinking generally about Canada's changing labour market.

TRENDS AND THEMES

Technological trends, such as AI Everything, were top of mind. Experts highlighted both their substantial current and potential impact, and the relatively slow rate of technological adoption in Canada. However, the level of exposure, adoption, understanding, and skepticism varied greatly across workshops and participants. Automation, for example, was almost always present in discussions as a potential disruptor to jobs and tasks. Yet awareness of the current and potential capabilities of technologies, perceptions of challenges to adoption, and opinions on the optimal level of adoption in sectors like health care and manufacturing ranged widely.

Trends relating to environmental sustainability were well understood as playing a growing role in shaping Canada's future labour market. In particular, Resource Scarcity was one of the most cited trends in all workshops affecting all sectors. Discussions often also extended to the potential effects of climate change, the growing prevalence of significant weather events, and the country's need to increase prevention and response capabilities.

Demographic change was a recurring theme, centering around the effects of an aging population and its impact on sectors like health care, and the economic need for immigration. Relatedly, experts brought up increasing inequality repeatedly, but focus around it varied from workshop to workshop.

The importance of the reconciliation process and the safeguarding of Indigenous rights was an important recurring topic. This arose in discussions around wider societal and national change as Indigenous peoples are an important and growing demographic, as well as in occupation-specific settings. As an example, experts explored the impact of changing judicial practices relating to land and sovereignty issues on court-related occupations.

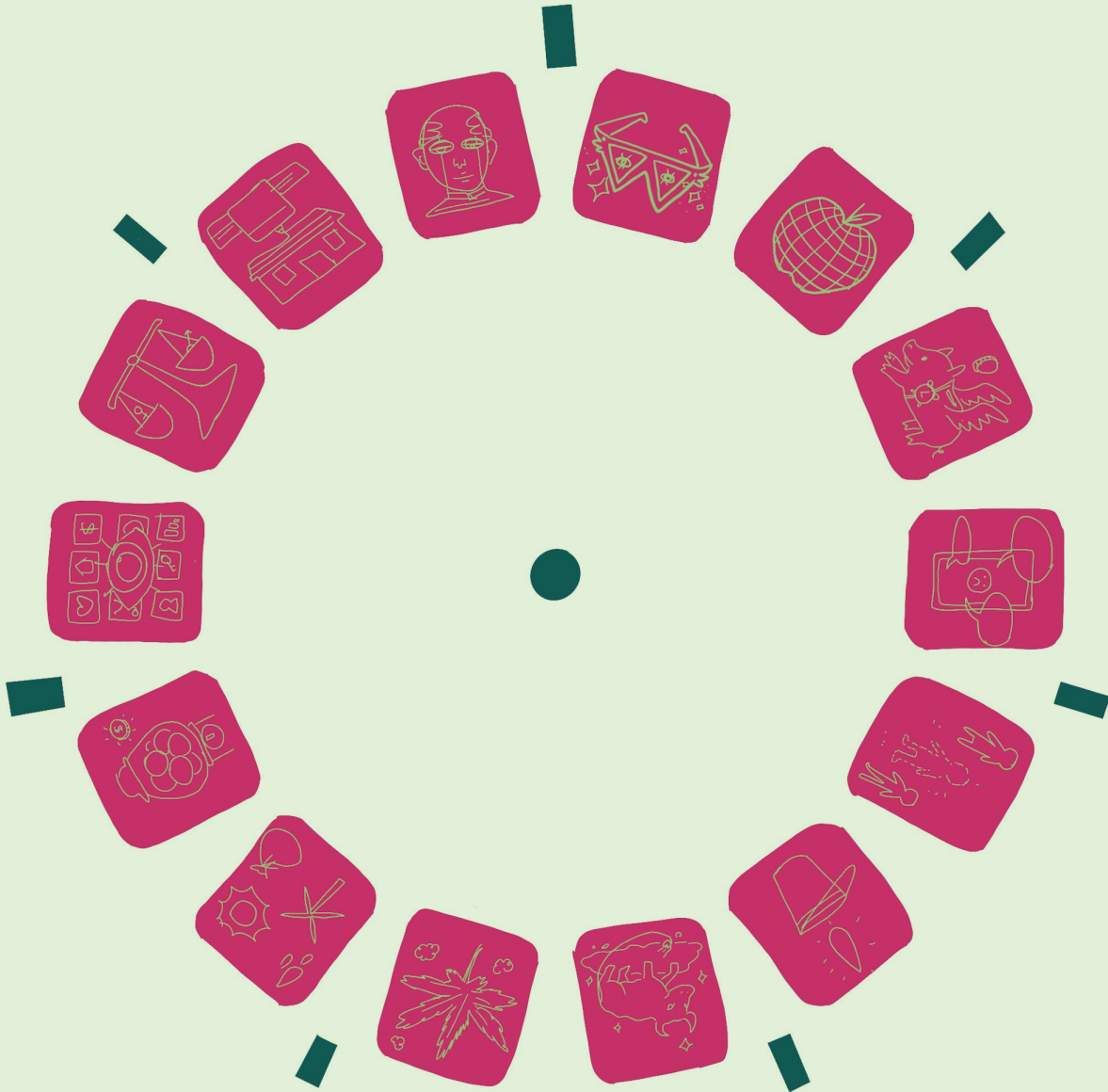
CONTEXT AND CONSIDERATIONS

Throughout the workshops, we ensured that conversations remain focused on Canada and stressed the importance of national-level discussions for all activities. However, each region viewed the national landscape with unique regional perspectives, demonstrating the importance of hosting numerous workshops.

While we worked with local convening partners to draw experts from various locations in each region, it is important to note that many participants were from the cities where workshops were hosted. Holding one or more workshops in each province and territory—while necessitating additional funding—would have been preferred as it would have gathered a broader range of perspectives.

Political uncertainty driven by upcoming elections, at both the federal and provincial levels, was often an important part of the conversation. This impacted many of the occupations rated, especially those relying on public sector funding and public policy, most notably as it related to fiscal constraint.

NEXT STEPS



The six workshops summarized in this report were delivered with the primary purpose of collecting the training data necessary for the next phase of the Employment in 2030 project. This next phase will see the data from these workshops fed into a machine learning algorithm to project impacts across the labour market and provide a forecast of skills likely to be in-demand in 2030. The results from this phase of work will be publicly available in early 2020.

In the meantime, *Signs of the Times* is meant to help policy makers, employers, educators, students, and the public gain early insights into how experts believe Canada's labour market is changing.

For the latest information about the Employment in 2030 project, see <https://brookfieldinstitute.ca/project/employment-in-2030/>

SPECIAL THANKS

The cover artwork and illustrations in this report were conceptualized and created by Toronto-based artist, Jesseca Buizon. Thank you to Lindsay Smail for the graphic designwork throughout the report.

