

THE
Productivity
Project —



THE COMING STORM

The Eight Forces Reshaping
Regional Labour Markets



THE Productivity Project —

The Productivity Project is a collaboration of a multidisciplinary team of experts from academia, industry, and policy. Together, they address a pivotal question: **How can human capital drive Canada's productivity?**

Series 1: Productivity and People delivers actionable insights through six research studies. For additional information on future publications, please visit ProductivityProject.ca



Please cite this report as:

Finch, D., Saunders, C., Levallet, N., Lane, J., McIntyre, S., Murgatroyd, S., Dovbischuk, I., & Griffiths, J. (2025). The Coming Storm: The Eight Forces Reshaping Regional Labour Markets. *The Productivity Project*.

SERIES 1

PRODUCTIVITY AND PEOPLE

Economic, social, and cultural dynamics—driven by rapid technological advancements and globalization—are profoundly reshaping regional economies. A region's competitive advantage is no longer dictated by its access to natural resources; instead, it's rooted in the productivity of its labour force.

Today, labour market productivity is anchored in individuals who can navigate uncertainty and adapt seamlessly. Adaptation, at its core, is the ability to learn, unlearn, and relearn.

Today, labour market productivity is anchored in individuals who can navigate uncertainty and adapt seamlessly.

AUTHOR TEAM

Dr. David Finch, *Mount Royal University*

Dr. Chad Saunders, *University of Calgary*

Dr. Nadège Levallet, *University of Maine*

Janet Lane, *Canada West Foundation*

Dr. Sharon McIntyre, *New Cottage Industries*

Dr. Stephen Murgatroyd, *University of Alberta*

Dr. Irina Dovbischuk, *Mount Royal University*

Jeff Griffiths, *Canada West Foundation*

Project Manager: Alexandra Swiston

Report Design: Sarah Thomson

Copy Editor: Jarica Kritsky

REPORT
01

Productivity and People: Exploring Human Capital's Role in Productivity

REPORT
02

The Coming Storm: The Eight Forces Reshaping Regional Labour Markets

REPORT
03

Unlocking Productivity: The Human Capital Supply Chain

REPORT
04

Untapped Potential: Mapping the Open Learning System

REPORT
05

Finding People: A Risk Management View of Hiring

REPORT
06

Path to Open Learning: A Policy Framework for Enabling Incumbents and Empowering New Entrants



CONTENTS

EXECUTIVE SUMMARY	7
The Challenge	7
The Opportunity	8
The Eight Forces	9
INTRODUCTION	12
The Competitive Advantage Of People	12
Input Resources	16
Activities Produced	16
Human Capital Supply	16
<i>Enabling Competencies</i>	16
<i>Task-specific Competencies</i>	16
Social Capital	16
Human Capital Productivity Outcomes	17
<i>Task Efficiency</i>	17
<i>Process Improvement</i>	17
<i>Technology Development and Adoption</i>	17
<i>Capital Allocation</i>	17
Value Creation	17
THE EIGHT FORCES	19
Talent Scarcity	20
<i>Access to Learning</i>	20
<i>Gender Equity</i>	21
<i>Racial Equity</i>	21
The Role Of Place	22
Declining Trust	24
<i>Delegitimizing Higher Education</i>	25
<i>Reframing Credentials</i>	25
<i>Trust in Leaders</i>	26
Automation	27
<i>Increasing Labour Market Disruption</i>	27
<i>Learning and Assessment</i>	28

The 50-Year Working Life	29
<i>The Shift to Continuous Learning</i>	30
<i>Blending Work and Personal Lives</i>	30
From Jobs To Competencies	31
<i>Hiring for Adaptive Capacity</i>	33
<i>Expansion of Boundary-Spanning Roles</i>	33
<i>Impacts on Foresight Planning</i>	33
Risk Management	35
<i>Amplifying Systemic Bias</i>	36
<i>Demand for Harmonized Open Continuous Learning</i>	37
The Rise Of Contingent Labour	38
<i>Increased Flexibility</i>	39
<i>Cost Savings</i>	39
<i>Access to Specialized Competency</i>	39
PREPARING FOR THE COMING STORM	41
Individual	41
Learning Provider	42
Credentialing Body	42
Policymakers	43
Employer	44
THE PATH FORWARD	47
BIBLIOGRAPHY	48
ACKNOWLEDGEMENTS	54

FIGURES & TABLES

FIGURES

Figure 1: Canada's Productivity Paradox	7
Figure 2: VUCA Forces Driving Organizational Transformation (% Employers)	13
Figure 3: Human Capital Ecosystem	14
Figure 4: The Human Capital Value Chain	15
Figure 5: The Eight Forces Reshaping Labour Markets	19
Figure 6: Barriers to Transformation (% Employers)	20
Figure 7: Talent Shortage by Education Demand (%)	21
Figure 8: Impact of Income on Institutional Trust	24
Figure 9: Perception that Hostile Activism is Justified (% by Age)	26
Figure 10: Task Completion 2025 to 2030 Activism is Justified (% by Age)	28
Figure 11: The Shift to Continuous Learning	30
Figure 12: Training Demand 2025-2030	31
Figure 13: Competency Demand Change 2025-30 (% Employers)	32
Figure 14: Hiring Risk Management Mechanisms	35
Figure 15: Contingent Labour in Canada by Motivation	39

TABLES

Table 1: Path to an Adaptive Labour Force	47
---	----

EXECUTIVE SUMMARY

THE CHALLENGE

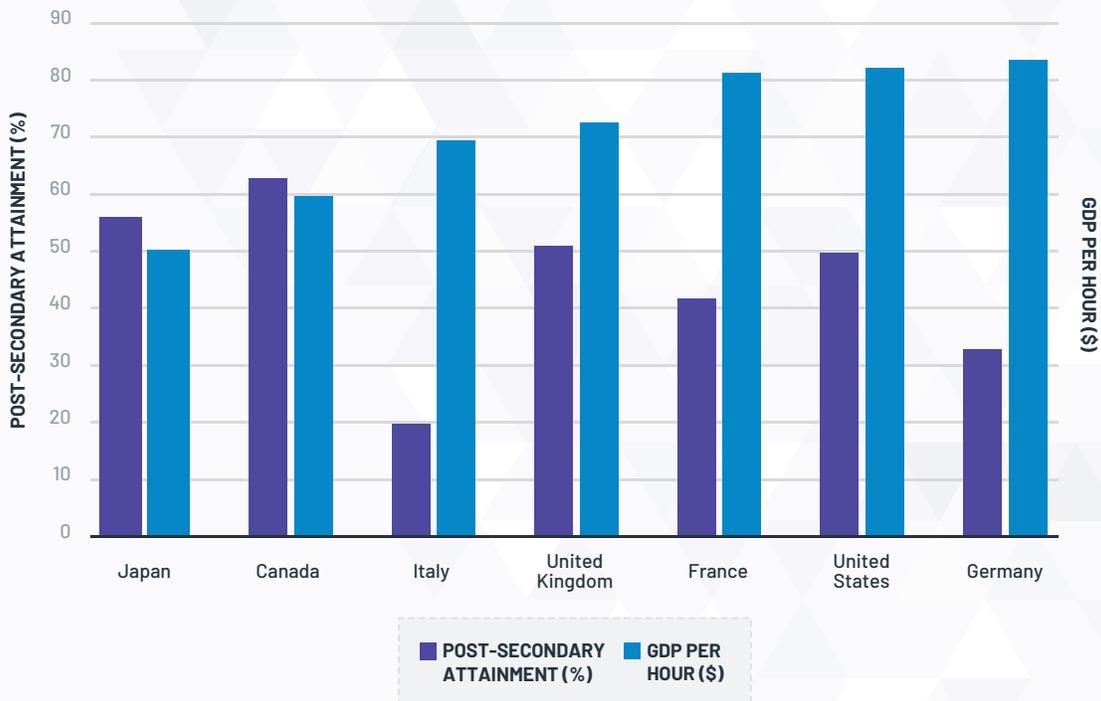
Historically, regional competitive advantage stemmed from natural resources, such as minerals and access to trading routes. However, economic, social, and cultural dynamics—driven by rapid technological advancements and globalization—are profoundly reshaping the landscape of regional competition. Today, human capital, operationalized by labour market productivity, anchors a region's competitive advantage.

Productivity measures the ability to produce more output with fewer inputs. Today's labour market demands individuals who thrive in uncertainty and possess the capacity to adapt to dynamic demands. However, Canada's human capital system

remains entrenched in its 19th-century industrial roots, contributing to fragmentation, inertia, and systemic inefficiencies. Moreover, this increased volatility has led to conditions in which no single stakeholder, whether a government, learning provider, employer, or credentialing body, can unilaterally overcome these structural challenges. The result is Canada has the highest ranked post-secondary completion rate in the OECD, while concurrently dropping to 18th in productivity.¹

Canada has the highest-ranked post-secondary completion rate in the OECD, while concurrently dropping to 18th in productivity.

FIGURE 1: CANADA'S PRODUCTIVITY PARADOX



Source: OECD, 2022; 2024

1

THE OPPORTUNITY

The dynamic labour market demands a systemic response from regional policymakers, credentialing bodies, employers, learning providers, and individuals. None of these stakeholders possesses the capacity to respond individually. Instead, the response must be collaboration. The response demands re-envisioning the nature of learning and the recognition that traditional learning systems, while essential, are only a tiny component of the rich but fragmented human capital ecosystem.

Ecosystems emphasize co-creation and interdependence, generating incremental value beyond what individual stakeholders can achieve. The regional human capital ecosystem incorporates five core stakeholders:

Individuals: Incorporating all residents of the region. They engage in the labour market by developing competencies through certified, non-certified, and informal learning pathways.

Learning Providers: Incorporating all individuals and organizations accountable for delivering certified, non-certified, and informal learning within a region.²

Credentialing Bodies: Incorporating all organizations that assess, verify, and acknowledge the qualifications and competencies of individuals within a specific profession or field.

Policymakers: Incorporating all levels of government with jurisdictional responsibility in the region, including local, municipal, provincial, state, national, or federal.

Employers: Incorporating all employers, business and professional associations from the region. They engage in the labour market by hiring and developing staff.



² The definition of a "region" is highly contextual. In this report it can be applied to communities, metropolitan areas, provinces or states, countries, or continents.

THE EIGHT FORCES

DISRUPTING FORCE	FORCE DESCRIPTION	RECOMMENDED RESPONSE
 TALENT SCARCITY	<p>Canada experiences both high unemployment and competency shortages.</p> <p>Systemic barriers (literacy, access, equity) hinder full workforce participation.</p>	<p>Inclusive and competency-driven labour systems could drive productivity growth and add billions to Canada's GDP. Employers must shift from proxies to competency-based hiring.</p>
 THE ROLE OF PLACE	<p>Though the pandemic precipitated a transformation in employment, 80 percent of occupations remain location-based, and 95 percent are anchored to geographic areas.</p>	<p>Regions must become more active in competency demand forecasting, competency development and local open recognition systems.</p>
 DECLINING TRUST	<p>Rising distrust in institutions disrupts knowledge legitimacy and hiring.</p>	<p>A transition to competency-based systems with transparent verification can rebuild trust.</p>
 AUTOMATION	<p>Up to 62 percent of Canadian jobs face the risk of some level of automation by 2028. Human value will be defined by their capacity to adapt.</p>	<p>The decoupling of learning pathways from competency assessment will unlock the potential of agile non-certified and informal learning pathways.</p>
 50-YEAR WORKING LIFE	<p>Over the next two decades, working lives will extend from 35 to 50+ years. This will impact continuous learning models and work cultures.</p>	<p>Learning will be decoupled from age. This demands that people adopt a continuous learning mindset and become empowered and accountable for their learning pathways.</p>
 FROM JOBS TO COMPETENCIES	<p>Technological advancements are significantly shortening the lifespan of many task-specific competencies that anchor various occupations. Value will be defined by an individual's capacity to adapt.</p>	<p>Adaptive capacity is the ability to learn, unlearn, and relearn. Learning systems will prioritize this at all levels.</p>
 RISK MANAGEMENT	<p>Current hiring proxies (degrees, references) amplify systemic bias.</p>	<p>Open, verified, technology-enabled credentialing systems offer equitable, trusted alternatives.</p>
 RISE OF CONTINGENT LABOUR	<p>Up to 35 percent of Canada's workforce is contingent, including contractors and gig workers.</p>	<p>Organizations adopt policies and support systems to integrate this growing segment.</p>

WHERE TO START

Individuals

Feed intentional curiosity. Establish personal and professional goals and a holistic learning plan to achieve them. Having the mindset and capacity to adapt is the superpower of the future.

Learning Providers

The first step for learning providers is to recognize the power of open learning. If the closed learning model resembles a static ladder, open learning resembles a rapidly expanding climbing wall. It incorporates infinite ways to learn, from traditional classrooms to employment, to volunteering, an art class or playing sports, listening to a podcast and everything in between. Learning providers must collaborate to empower learners to climb.

Credentialing Bodies

Open and continuous learning is founded on open and continuous competency assessments. Credentialing bodies have the expertise and experience to lead the development of rigorous and trusted competency assessment models. However, this starts by recognizing that an open future begins with a collaboration-first mindset. Become part of the solution by collaborating on open solutions.

Policymakers

As supporters of the labour market development system, policymakers at all levels need to recognize open learning. An important first step is to map the stakeholders in the open learning system and become the bridge to empower collaboration. Doing so requires policymakers to recognize that an investment in the structural capital that connects the system has a multiplier impact.

Employers

Employers are no longer customers of traditional learning but co-creators in an open, continuous learning system. The first step forward is to recognize the importance of collaborating across the system, whether with other employers, learning providers, credentialing bodies, or policymakers.



INTRODUCTION

THE COMPETITIVE ADVANTAGE OF PEOPLE

In the past, a region's competitive edge was largely determined by its access to key natural resources, such as timber, oil, or iron ore, along with proximity to navigable waterways. These geographic advantages fueled economic growth by enabling resource extraction, trade, and the rise of manufacturing hubs.³ In recent decades, competitive advantage in many regions has transitioned from reliance on natural resources to measures of productivity.

Productivity measures the ability to produce more output with fewer inputs. Productivity is fundamentally rooted in optimizing its human capital—its labour force. For organizations, productivity directly impacts their profitability and competitive position. At a regional level, it serves as a key indicator of competitiveness, underpinning economic and social prosperity. At the country level, productivity accounts for over

50% of the variation in gross domestic product per capita. Human capital comprises a person's knowledge, skills, values, experience, and abilities, contributing to economic productivity and social prosperity.⁴ While human capital is developed at the individual level, it also accumulates collectively within communities, shaping a region's labour force and serving as a critical foundation for sustained socio-economic growth.⁵

The World Economic Forum projects that up to a quarter of the global labour market is facing significant restructuring over the next five years.

The relationship between labour and regional economic development is well-documented. Research indicates that labour is strongly associated with factors essential to regional economic development, including labour productivity, innovation, technology adoption, and market valuation. Moreover, studies suggest that the geographic concentration of labour facilitates the adoption of new knowledge through effective information diffusion and shared learning.⁶

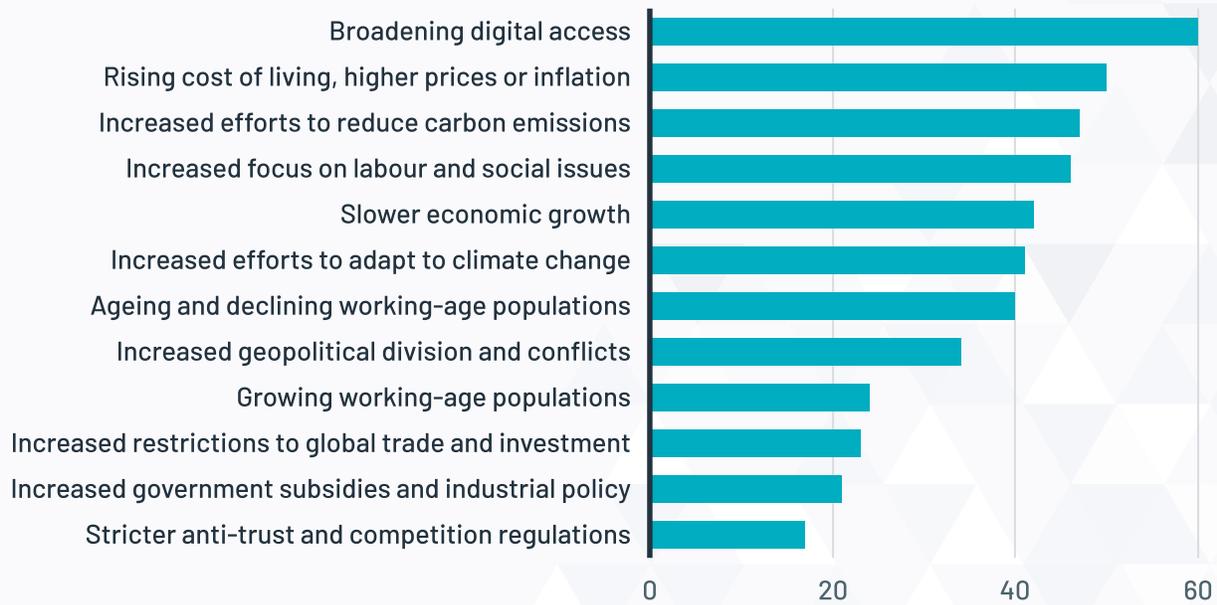
³ From Kotsantonis & Serafeim, 2020.

⁴ From Government of Canada, n.d.

⁵ From Kotsantonis & Serafeim, 2020.

⁶ For further information, refer to studies on the relationship of factors to regional economic development, Kotsantonis & Serafeim, 2020; labour productivity, Osiobe, 2019; Innovation Gruzina et al., 2021; Competitiveness Amir, 2024; information diffusion, Guastella & Timpano, 2016.

FIGURE 2: VUCA FORCES DRIVING ORGANIZATIONAL TRANSFORMATION (% EMPLOYERS)



Source: World Economic Forum, Future of Jobs Survey 2024.

However, labour markets face increasing disruption from technology, demographics, globalization, and changing social values. As far back as 1987, the U.S. Army War College introduced four dimensions to define emerging challenges facing military decision-making in a multilateral world: volatility, uncertainty, complexity, and ambiguity. Collectively referred to as VUCA, these forces increase the complexity of decision-making. A World Economic Forum survey of employers identified a series of VUCA forces driving organizational transformation (Figure 1).

Today, Canada boasts the highest post-secondary completion rate among Organisation for Economic Cooperation and Development (OECD) nations. Yet, it ranks just 18th in labour market productivity, highlighting a critical mismatch between labour market supply and demand. For example, in 2024, the number of degree holders seeking employment was nearly four times higher than the available jobs requiring such qualifications.⁷ Moving forward, Canada's labour market productivity will not be defined by academic credentials but by its ability to adapt.

Canada boasts the highest post-secondary completion rate among OECD nations. Yet, it ranks just 18th in labour market productivity, highlighting a critical mismatch between labour market supply and demand.

⁷ From Lane & Griffiths, 2023.

A HUMAN CAPITAL ECOSYSTEM

FIGURE 3: HUMAN CAPITAL ECOSYSTEM



Eight macro forces are reshaping how human capital is developed and deployed—demanding a systemic, collaborative response. These forces demand collaboration among policymakers, employers, learning providers, credentialing bodies, and learners. No single stakeholder can address these challenges alone. Instead, the socio-economic prosperity of a region will depend on a coordinated effort to reimagine learning and recognize that the traditional learning model, while vital, is just one piece of a broader—and often fragmented—human capital ecosystem.

A business ecosystem is a dynamic network of interconnected stakeholders collaborating to create and deliver shared value. Ecosystems

emphasize co-creation and interdependence, generating incremental value beyond what individual stakeholders can achieve. As per Figure 2, the regional human capital ecosystem incorporates five core stakeholders:

Individuals: Incorporating all residents of the region. They engage in the labour market by developing competencies through certified, non-certified, and informal learning pathways, and then apply those competencies in the workforce.

Learning Providers: Incorporating all individuals and organizations accountable for delivering certified, non-certified, and informal learning within a region.⁸

Credentialing Bodies: Incorporating all organizations that assess, verify, and acknowledge the qualifications and competencies of individuals within a specific profession or field.

Policymakers: Incorporating all levels of government with jurisdictional responsibility in the region, including local, municipal, provincial, state, national, or federal.

Employers: Incorporating all employers, business and professional associations from the region. They engage in the labour market by hiring and developing staff.

The biggest challenge facing the human capital ecosystems is not external factors, but the established rules, routines, practices, and cultures that shape how people think and act. Individuals and employers are no longer just customers of the traditional education system; they now help shape the learning process at all levels.

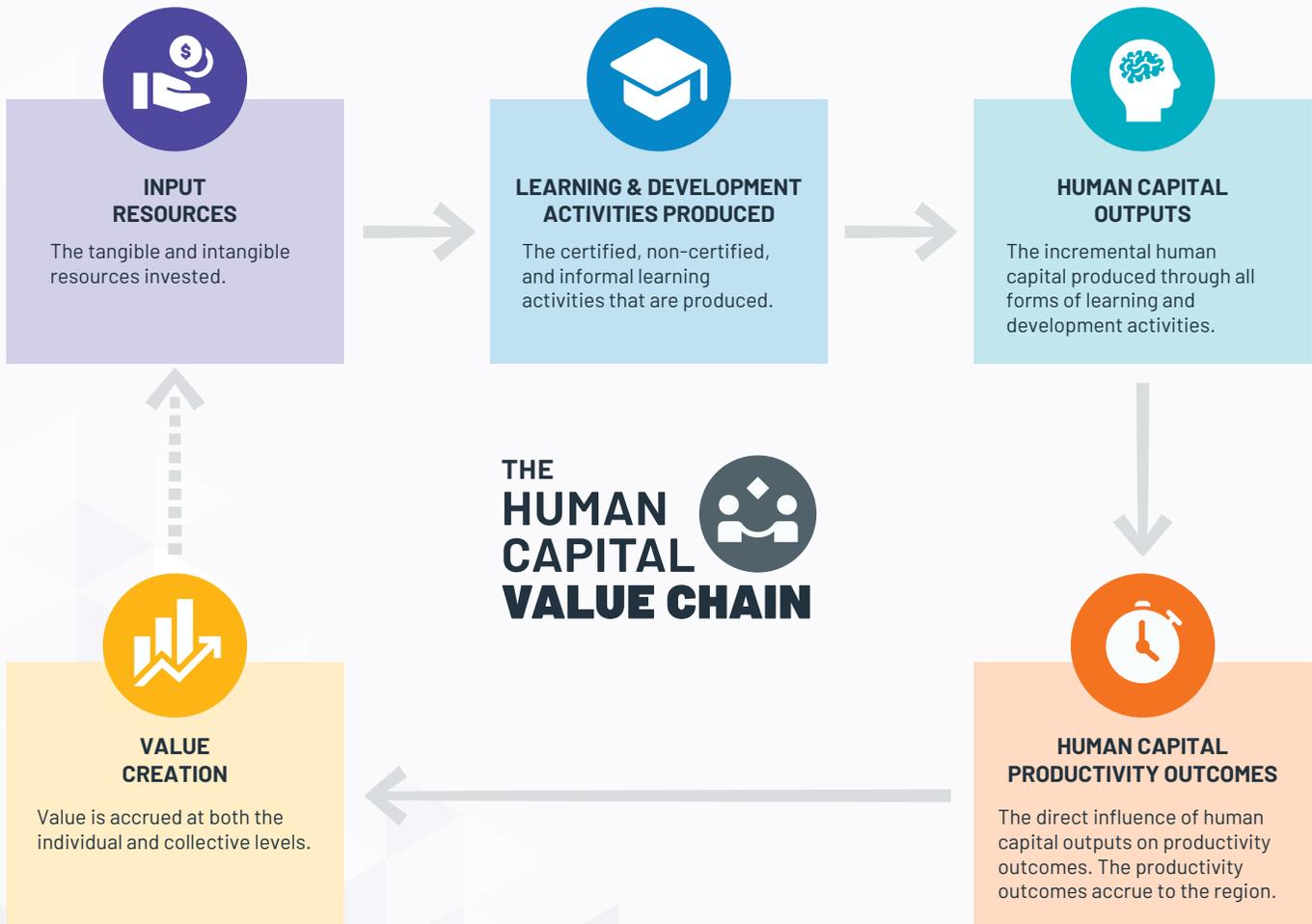
With this new role comes important responsibilities. Individuals must take more ownership of their learning at any age. Employers should invest more meaningfully and sustainably in learning. This investment may include working with high schools, universities, or training their current employees through modes of experiential learning.

⁸ The definition of a “region” is highly contextual. In this report it can be applied to communities, metropolitan areas, provinces or states, countries, or continents.

THE VALUE OF HUMAN CAPITAL

In today's changing labour market, no single group—such as governments, schools, or employers—can drive labour market productivity on their own. Consequently, it is essential to comprehend the systematic attributes of the human capital value chain, which encompasses input resources, learning and development activities, human capital outputs, human capital productivity outcomes, and value creation (Figure 3).⁹

FIGURE 4: THE HUMAN CAPITAL VALUE CHAIN



⁹ For additional detail, refer to report 1 in this series, Productivity and People: Exploring Human Capital's Role in Productivity.

INPUT RESOURCES

Input resources include both physical and non-physical investments from stakeholders. We use the communities' capital framework, which identifies seven types of capital: natural, financial, built, human, political, social, and cultural. These resources form the base of the human capital value chain.¹⁰

ACTIVITIES PRODUCED

Learning systems generate activities spanning certified, non-certified, and informal learning pathways, including traditional classroom, experiential, or self-directed learning. Central to these are curriculum design and learning assurance mechanisms that validate effectiveness relative to program goals.

Certified Learning: Certified learning incorporates structured learning experiences. It is organization-bound and time-bound, resulting in formal certification by a formal organization, professional body, or sanctioned certifying agency.¹¹

Non-Certified Learning: Non-certified learning incorporates structured learning experiences. It is organization-bound and time-bound but does not result in a formal certification.

Informal Learning: Informal learning incorporates diverse lived experiences and unstructured learning resources, from paid employment to self-directed learning.

HUMAN CAPITAL SUPPLY

Human capital supply is the output produced by the learning and development activities. We cluster competencies into (1) Enabling competencies and (2) Task-specific competencies. In addition, the learning activities play a significant role in developing an individual's personal and

professional networks, which accrue to an individual in the form of social capital.

Enabling Competencies

Enabling competencies are foundational to an individual's adaptive capacity and apply an individual's intelligence and personality resources. These resources are not context-specific and, therefore, are applicable in diverse situations. Evidence shows that enabling competencies are critical to employability. Researchers commonly identify enabling competencies across problem-solving, collaboration, communication, core literacies, and self-regulation.

Task-specific Competencies

Task-specific competencies are the relevant knowledge, skills, values, experience, and abilities needed to complete a specific job. Task-specific competencies incorporate functional competencies (e.g., computer programming), sectoral competencies (e.g., expertise in an industry), or organization-level competencies (e.g., start-up expertise).

SOCIAL CAPITAL

Social capital encompasses the tangible and intangible value derived from networks of relationships—both strong ties (e.g., family, close friends) and weak ties (e.g., acquaintances, professional contacts)—that collectively bind individuals to their communities and broader society. These networks facilitate trust, reciprocity, and access to resources, enabling collective action and individual opportunity. While close relationships provide emotional support, weaker or more diverse connections often bridge social divides, exposing individuals to new ideas, resources, and pathways beyond their immediate comfort zones.¹²

¹⁰ Herein, we adopt the communities' capital framework (Emery & Flora, 2006), which defines seven types of capital: natural, financial, built, human, political, social, and cultural. These resources form the foundation for generating value within the labour market system.

¹¹ For further information on certified and non-certified learning taxonomies, refer to the reports by Powley & Childs (2005), UNESCO (2015), and UNESCO Institute for Statistics (2012).

¹² Refer to Lin, 2017.

HUMAN CAPITAL PRODUCTIVITY OUTCOMES

Human capital productivity reflects the direct relationship between human capital outputs and productivity. Productivity outcomes accrue to an individual, a collective, including an organization, region, or country. Productivity outcomes can be categorized into four areas:

Task Efficiency

Maximizing output quality while minimizing wasted time, labour, and materials. Key metrics include completion speed, error reduction, and optimal resource utilization.

Process Improvement

Building a culture of continuous innovation where incremental enhancements drive operational excellence and competitive advantage.

Technology Development and Adoption

Accelerating productivity through strategic research and development investments, as well as the seamless integration of cutting-edge tools.

Capital Allocation

Leveraging financial acumen to direct resources where they generate the highest returns.

Increased volatility in labour markets has led to conditions in which no single stakeholder, whether a government, educational institution or employer, can drive productivity growth by itself.

VALUE CREATION

Value creation considers the impact of the human capital value chain at three distinct levels: an individual, an organization, and a region. For decades, researchers have explored effective methodologies to quantify this value. While traditional approaches often focus narrowly on productivity metrics, contemporary frameworks recognize that value creation extends beyond pure economic output to encompass broader dimensions of prosperity.

Building on this, we employ a balanced scorecard approach that evaluates human capital through four integrated lenses:

Economic value: Includes measures related to individual, organizational, and regional economic well-being.

Social value: Includes measures related to social cohesion and community.

Personal value: Includes measures related to the physical, social, and mental well-being of individuals.

Ecological value: Includes measures related to environmental and ecological well-being.

This multidimensional framework aligns with leading indicators like the OECD's Better Life Index while providing a deeper understanding of human capital's impact on well-being. It offers stakeholders a more holistic opportunity to allocate future input resources.¹³ Therefore, the value chain is a continual feedback loop.

¹³ For further information on well-being indices, refer to studies by King et al., 2018; Durand, 2015; Anielski, 2007.



THE EIGHT FORCES

The intersection of VUCA forces and unique regional dynamics demands that a labour force possess the capacity to adapt to a VUCA future. This section overviews the eight forces (Figure 4) shaping labour markets and their implications.

FIGURE 5: THE EIGHT FORCES RESHAPING LABOUR MARKETS



FORCE 1 TALENT SCARCITY

A World Economic Forum survey found that talent scarcity is a significant barrier to business transformation. As talent gaps grow, regions must better utilize their available labour force (Figures 5).¹⁴ This challenge arises when the competencies needed aren't found among job seekers. However, a diverse candidate pool can offer benefits; for instance, organizations with diverse teams often see 35 percent higher financial returns and increased ability to serve diverse clients. In Canada, an inclusive labour market could add up to \$337.7 billion annually to the GDP.¹⁵

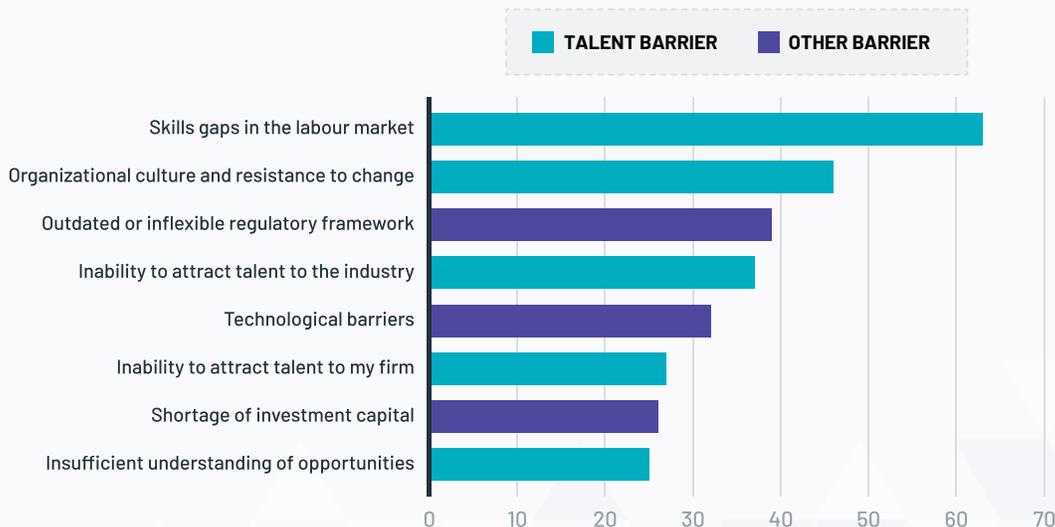
One key issue impacting labour market productivity is the number of working-aged individuals with low literacy levels. The OECD's recent assessment indicated that many adults struggle with basic reading tasks; in Canada, 19 percent scored below level 1 literacy, and 30 percent reached

only level 2. This decline in literacy from 2011 to 2023 can hinder labour market participation. Studies suggest that even a small increase in literacy can significantly boost GDP.¹⁶

Access to Learning

A study conducted by the Conference Board of Canada on the growing competency gap revealed significant variations in educational requirements across different occupational clusters (Figure 6). Overall, two-thirds of occupations facing shortages require post-secondary education, including diplomas and trade certificates, while one-third necessitate university degrees. For instance, many roles in engineering are available exclusively to degree holders. This trend is also observed in higher-skilled service roles, such as nursing and allied health professions, which require advanced education and credentials. In the technical sector, 80 percent of job vacancies in the top five occupations with shortages require post-secondary education.¹⁷

FIGURE 6: BARRIERS TO TRANSFORMATION (% EMPLOYERS)



Source: World Economic Forum, Future of Jobs Survey 2024.

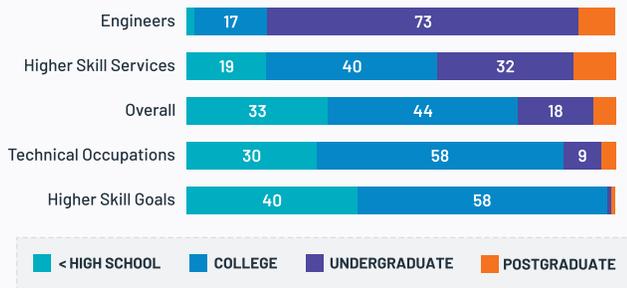
¹⁴ From World Economic Forum, 2024.

¹⁵ From McKinsey & Company, 2020; Tompa et al., 2022.

¹⁶ From Schwerdt, Wiederhold & Murray, 2020.

¹⁷ From Conference Board of Canada, 2025.

FIGURE 7: TALENT SHORTAGE BY EDUCATION DEMAND (%)



Source: World Economic Forum, Future of Jobs Survey 2024.

Moreover, studies identify that by requiring a university degree, employers effectively exclude 62 percent of the U.S. population, including 70 percent of African Americans, 80 percent of Latinos, and 78 percent of residents in rural areas. Unsurprisingly, educational attainment is closely linked to parental education and household income, which reinforces generational advantages.¹⁸

An inclusive labour market could add as much as \$337.7 billion annually to Canada’s GDP.

Gender Equity

Even in the most developed countries, a significant pay equity gap exists between men and women. For example, in Canada, women earn 87 cents for every dollar a male makes in the same role. This disparity is particularly pronounced among women of colour

and women with disabilities.¹⁹ Structural factors such as occupational segregation, the prevalence of part-time employment, and caregiving responsibilities disproportionately impact women, limiting their income-generating potential and opportunities for work-life advancement.

Racial Equity

Racial equity is another concern, as racialized individuals (including Indigenous communities) face higher unemployment rates and lower wages. Immigrants often struggle to have their foreign credentials recognized, making it harder for them to find work that matches their qualifications.

Regions that effectively leverage their labour force will attract more employers and talent. To enhance this, hiring practices should focus on candidates’ competencies, regardless of how they acquired them.²⁰

PRODUCTIVITY IMPLICATIONS

Productivity starts with people. Economic regions that utilize the full potential of their labour force will possess a structural advantage. To accomplish this, it is crucial to transform the hiring process to prioritize evidence of a candidate’s competencies, regardless of the learning pathway. Recognizing the importance of non-certified and informal learning can unlock the full potential of the labour market and help bridge the productivity gap that many employers currently face.

¹⁸ U.S. Census Bureau. 2023; National Center for Education Statistics, 2024.

¹⁹ From Moyser, 2019.

²⁰ From Picot & Hou, 2020; Reitz, 2018.

FORCE 2

THE ROLE OF PLACE

The pandemic dramatically reshaped how we work, accelerating remote and hybrid arrangements. While only seven percent of Canadians worked remotely in 2016, this surged to 40 percent in early 2020. However, it's now stabilized around 20 percent.²¹

Research suggests up to 39 percent of occupations could be done entirely remotely, allowing workers to decouple from geography, such as digital nomads. Yet, in reality, employment and geography are still closely connected today. For example, Statistics Canada reported that in 2022, only 1.6 percent of workers lived outside the province of their employer.²² Although recent studies show that more people are living farther away from their jobs since the pandemic, most workers still stay within their region. A U.S. study found that between 2019 and 2023, there was a sevenfold increase in employees living 80 kilometres or more from their workplaces.²³ However, that only accounted for 5.5 percent of the labour market and was strongly linked to income.²⁴

While employment trends will continue to evolve, regions' specific roles in sharing information, fostering collaboration, and building connections will continue to be essential for shaping and supporting labour market productivity.²⁵

Recent studies suggest that between 37 and 39 percent of occupations could be completed in a fully remote mode.



²¹ From Statistics Canada, 2024.

²² From Statistics Canada, 2024.

²³ From Akan et al., 2024.

²⁴ From Dingel & Neiman, 2020.

²⁵ For further information see Statistics Canada, 2024; Akan et al., 2024; Lanvin & Monteiro, 2023.

PRODUCTIVITY IMPLICATIONS

Though they are becoming increasingly localized in many countries, core policy areas central to labour market productivity reside at a national or provincial level, including education and training, health and safety, labour standards, wages, social welfare, taxation, labour market data, and professional designations. Consequently, economic regions have limited policy tools to develop their human capital system. To overcome this, regions must become more active in labour force development and deployment.

Regions should focus on their unique strengths when building innovation systems instead of copying models from places like Silicon Valley. They need to encourage collaboration within the regional human capital ecosystem and become leaders in policy innovation. This includes developing new ways to recognize competencies and promote inclusivity in the labour market.²⁶ These regions should also create welcoming policies to attract the best talent. Treating local policymaking as a testing ground will help ensure that labour markets stay flexible and responsive.

This may involve facilitating collaboration in areas such as forecasting competency demand, deploying local open recognition systems, and allocating resources to enhance the inclusivity of the labour force. Economic regions would benefit more by focusing on developing place-based innovation systems that leverage their unique strengths, rather than trying to replicate models from other areas, such as Silicon Valley. This effort should include promoting collaboration within the regional labour market.

Additionally, these regions will thrive if they position themselves as hubs for productivity innovation by pioneering strategies like alternative credentialing systems, competency-sharing platforms, and localized initiatives for labour force inclusivity. They should also work on attracting the labour force needed to support desirable local employment by implementing favourable policies and treating regional policymaking as a space for productivity experimentation. This approach will ensure that labour markets remain both adaptive and agile.

²⁶ Open recognition refers to publicly acknowledging and transparently validating learners' achievements and competencies. For additional information, go to openrecognition.org

FORCE 3 DECLINING TRUST

Decades of declining trust in institutions – from businesses and governments to media and NGOs – have reached a critical point, particularly among younger generations worldwide.²⁷ The pandemic intensified this trend, creating what Edelman terms an ‘à la carte reality,’ where people increasingly embrace facts that align with their beliefs rather than objective evidence. This shift toward emotionally driven decision-making now profoundly influences both global politics and workplace dynamics.²⁸

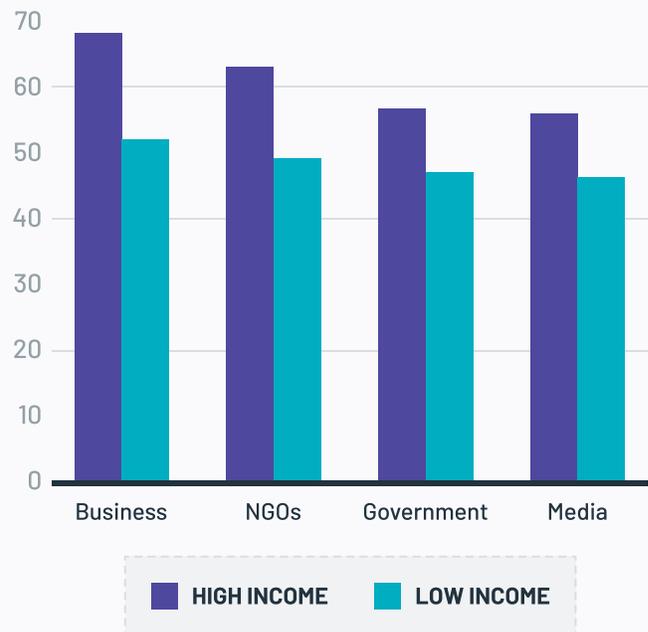
The data reveals troubling consequences: trust across all institutions has plummeted, with income inequality serving as a key accelerant (Figure 7). Perhaps most strikingly, Edelman found that 50 percent of 18-34-year-olds now believe hostile activism is justified to achieve their goals (Figure 8).²⁹ We’ve seen the tangible outcomes in events like Brexit and the Trump presidency, where leaders successfully capitalized on this distrust to challenge fundamental institutions. Recent efforts to politicize academic funding in Alberta and the U.S. demonstrate how this cycle perpetuates – as institutions weaken, public trust erodes further, creating a dangerous feedback loop.³⁰

For business leaders, this erosion of trust presents both a pressing challenge and a strategic opportunity. Companies that prioritize transparency, demonstrate authentic values, and foster genuine engagement may discover a powerful competitive edge in attracting top talent and building customer loyalty in this new era of skepticism.

PRODUCTIVITY IMPLICATIONS

Increasing distrust, an à la carte reality, and the resulting actions to deconstruct foundational institutions of society will have enormous implications on the productivity of regional labour markets and the human capital system.

FIGURE 8: IMPACT OF INCOME ON INSTITUTIONAL TRUST



Source: World Economic Forum, Future of Jobs Survey 2024.

27 From Edelman, 2024.

28 For further information see Twenge et al., 2014; Benoit, 2024; Edelman, 2025.

29 Edelman, 2025.

30 For further information see University Affairs, 2024, July 10; Sentner & Quilantan, 2025.

Delegitimizing Higher Education

One impact of eroding trust is a focused effort to delegitimize higher education and academia. In 2021, J. D. Vance's (now U.S. Vice President) speech, 'The Universities are the enemy,' defined explicit plans to deconstruct academic freedom, stating: "If any of us want to do the things that we want to do for our country and for the people who live in it, we have to honestly and aggressively attack the universities in this country."³¹ The Trump White House is actively implementing this policy by using civil rights legislation to threaten the withdrawal of federal funding for sixty universities, including Yale, Columbia, Princeton, Harvard, and Stanford, unless they comply with Federal directives.³² In addition, the U.S. government has begun revoking visas from graduate students who it claims threaten the government.³³

These actions by the Trump Administration will have a broader impact on higher education and academic mobility. For example, a coalition of 350 scientists has proposed that the European Union establish a fund of 750 million Euros to recruit American academics.³⁴ Moreover, three high-profile Yale professors have recently announced they are leaving for the University of Toronto in response to political interference.³⁵ Finally, these policies will dramatically impact the one million international students the US traditionally hosts. This will create opportunities for countries like Canada to attract high-demand graduate students who choose to study outside of the United States.

Edelman refers to this as an "à la carte reality" where people accept or reject facts that align with their defined social views.

Reframing Credentials

The erosion of trust presents both a challenge and an opportunity for the labour market productivity. While it may push some toward traditional—but often biased—hiring proxies like degrees and diplomas, it also creates space for more equitable, competency-based approaches.³⁶

Forward-thinking employers are already leading this shift. Companies like Google, IBM, and Walmart, along with the U.S. Federal Government and 16 states, now prioritize competencies over certifications. The trend is accelerating as 60 percent of employers adopted competency-based hiring in 2024, up from 40 percent in 2020. By 2030, over 75 percent of entry-level roles are expected to follow suit.³⁷ The opportunity is clear: Open learning pathways, paired with rigorous competency assessments, can unlock labour market productivity by addressing systemic biases. However, success depends on whether stakeholders embrace these new models or retreat to outdated proxies.

³¹ From Vance, 2021.

³² From Department of Education, 2025.

³³ From Knox, 2025.

³⁴ From Porter, 2025.

³⁵ From Quinn, 2025.

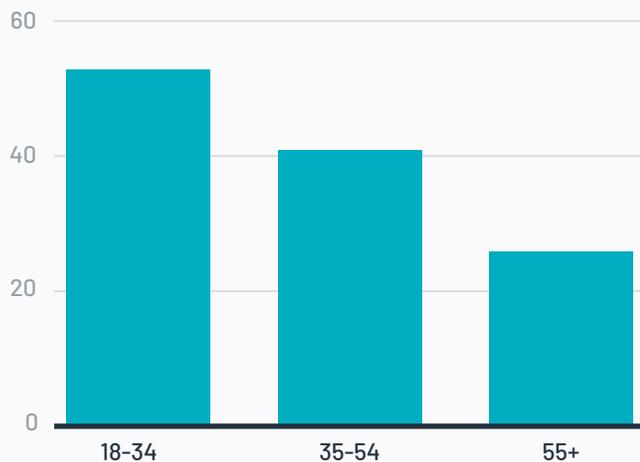
³⁶ For further information see Edelman, 2025; Lane & Griffiths, 2023.

³⁷ From Bloom et al., 2015.

Trust in Leaders

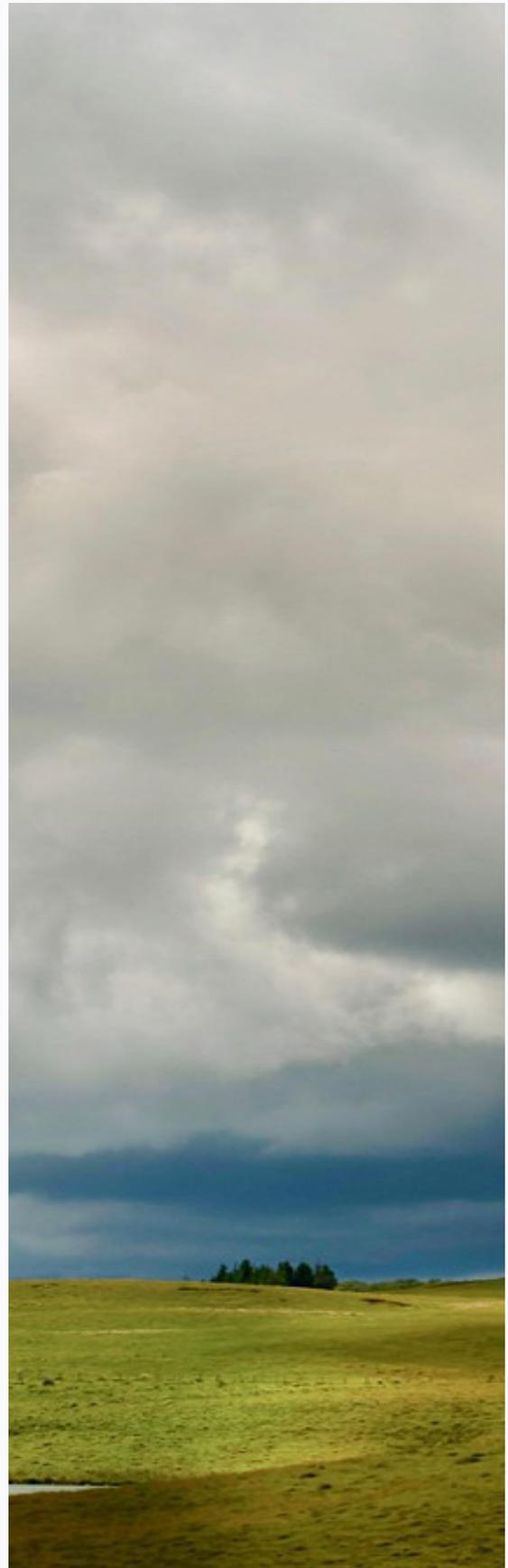
Employees may be less willing to embrace change or engage in collaborative innovation processes if their trust in organizational leadership erodes. This limits their opportunity to develop essential enabling competencies such as adaptability, creativity, and problem-solving. Skepticism toward leadership's ability to manage innovation can weaken organizational culture, making it harder for organizations to attract and retain top talent or align competencies with critical tasks, strategic goals and the need for innovation. Poor hiring weakens the absorption capacity of organizations. Lastly, new work models, such as hybrid or remote work, are founded on mutual trust between employees and employers. Increasing institutional distrust may lead to introducing institutional-level policies, such as mandating all employees to return to the office, irrespective of their role or individual performance. The pursuit of collaborative orchestration policies that challenge the à la carte reality and increase transparency and harmonization across human capital partners are ways for economic regions to address these issues. Such collaboration will add to the region's jurisdictional advantage.³⁸

FIGURE 9: PERCEPTION THAT HOSTILE ACTIVISM IS JUSTIFIED (% BY AGE)



Source: World Economic Forum, Future of Jobs Survey 2024.

³⁸ From Gordon, 2012; Paschina, 2023.



FORCE 4

AUTOMATION

Technology adoption is critical for boosting productivity and maintaining competitiveness in today's business landscape. The transformative impact of automation on labour is not new—its roots trace back to the Industrial Revolution, with early innovations like mechanized weaving and agricultural automation. While predicting technology's full effect on the labour market remains complex, experts agree its influence will be profound.

Today, automation spans industries, from industrial robotics to AI-driven applications in management, logistics, finance, accounting, HR, and marketing.³⁹ Currently, 34 percent of business-related tasks are automated, with projections suggesting this will rise to 42 percent by 2027. The labour market risk is significant, as a Canadian study estimates that 22 percent of jobs face a high risk of automation by 2028, with another 40 percent at medium risk.⁴⁰

A Canadian study estimates that 22 percent of all employment faces a high risk of automation before 2028, and another 40 percent faces a medium risk.

Global insights reinforce this trend (Figure 9). According to a World Economic Forum survey, only 33 percent of tasks today are primarily performed by humans, but the balance between human and automated work will shift dramatically by 2030. Notably, 42 percent of business tasks and 65 percent of data-processing roles could be automated by 2027.⁴¹

Yet history shows that technological disruption often creates new opportunities. While automation will reshape many roles, it may also foster greater human-machine collaboration and even expand employment in emerging fields. For businesses, the key lies in proactive adaptation—leveraging technology to enhance productivity while preparing the labour market for the evolving demands of the future.

PRODUCTIVITY IMPLICATIONS

Technology, from the printing press to electrification, has reshaped labour market productivity throughout history. Automation will significantly impact today's regional labour markets. First, it will affect competency supply and demand dynamics, particularly in health systems and key professions.⁴² The second significant effect will be the reshaping of learning, competency assessment, and capability verification.

Increasing Labour Market Disruption

As automation and artificial intelligence (AI) assume more tasks once handled by humans, sectors like manufacturing, logistics, finance, law, and accounting will face significant labour market disruption. Yet history shows that technological progress doesn't just eliminate occupations—it reshapes them. Employers anticipate that, despite short-term displacement, automation will drive net labour market growth.⁴³

³⁹ For further information see Acemoglu & Restrepo, 2019; Wyonch, 2020; Di Battista. et al., 2023; Braxton & Taska, 2023.

⁴⁰ For further information see Acemoglu & Restrepo, 2019; Wyonch, 2020; Di Battista. et al., 2023; Braxton & Taska, 2023.

⁴¹ For further information see Acemoglu & Restrepo, 2019; Wyonch, 2020; Di Battista. et al., 2023; Braxton & Taska, 2023.

⁴² From Demirci et al., 2024.

⁴³ From Di Battista. et al., 2025

The key lies in the shifting nature of work. While routine, repetitive tasks are most vulnerable to automation, demand is surging for skilled professionals who can develop, manage, and optimize these technologies. Emerging roles—from AI prompt engineers to specialists in human-machine collaboration—highlight the growing need for task-specific expertise.

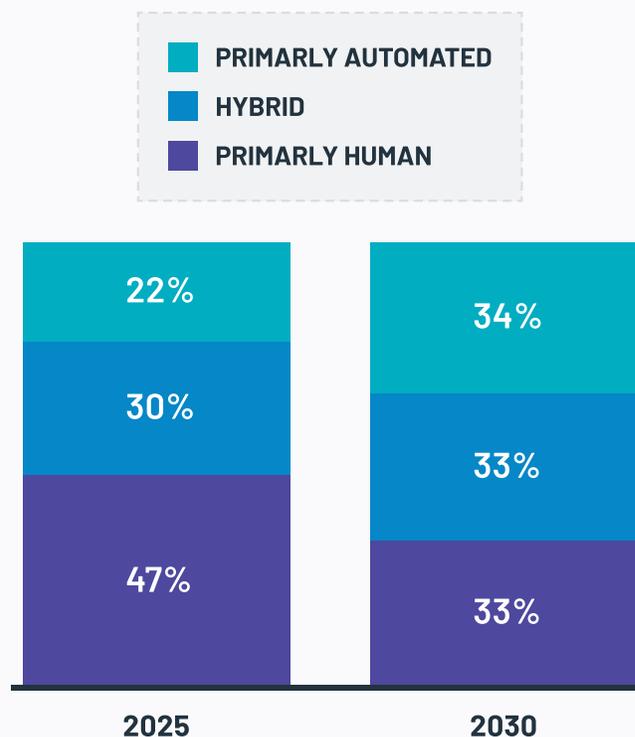
Moreover, as technology integrates deeper into business and society, hybrid human-machine roles are becoming critical. Consider the rise of empathic eldercare robots, which don't replace caregivers but require human oversight and emotional intelligence to function effectively. Similarly, breakthroughs like ChatGPT have created entirely new skill sets, proving that automation often expands, rather than contracts, labour market opportunities.⁴⁴

For businesses, the imperative is clear: invest in upskilling to harness automation's productivity gains while preparing the labour market for the jobs of tomorrow.

Learning and Assessment

Automation is projected to be increasingly important in training and competency assessment. Historically, verifying competency assessment has been limited to larger businesses and roles requiring evaluation and certification. Automation improves the productivity and rigour of competency assessment, creating pathways for harmonized open recognition. This shift will transform the human capital value chain by decoupling learning pathways from competency assessment, unlocking the potential of non-certified and informal learning pathways, especially for individuals with high-valued competencies but no formal post-secondary credentials.

FIGURE 10: TASK COMPLETION 2025 TO 2030 ACTIVISM IS JUSTIFIED (% BY AGE)



Source: World Economic Forum, Future of Jobs Survey 2024.

⁴⁴ For further information see Tiwari, 2023; Suskind, 2022; Di Battista, et al., 2025; Mungoli, 2023; Zhang, Luo & Wong, 2024.

FORCE 5

THE 50-YEAR WORKING LIFE

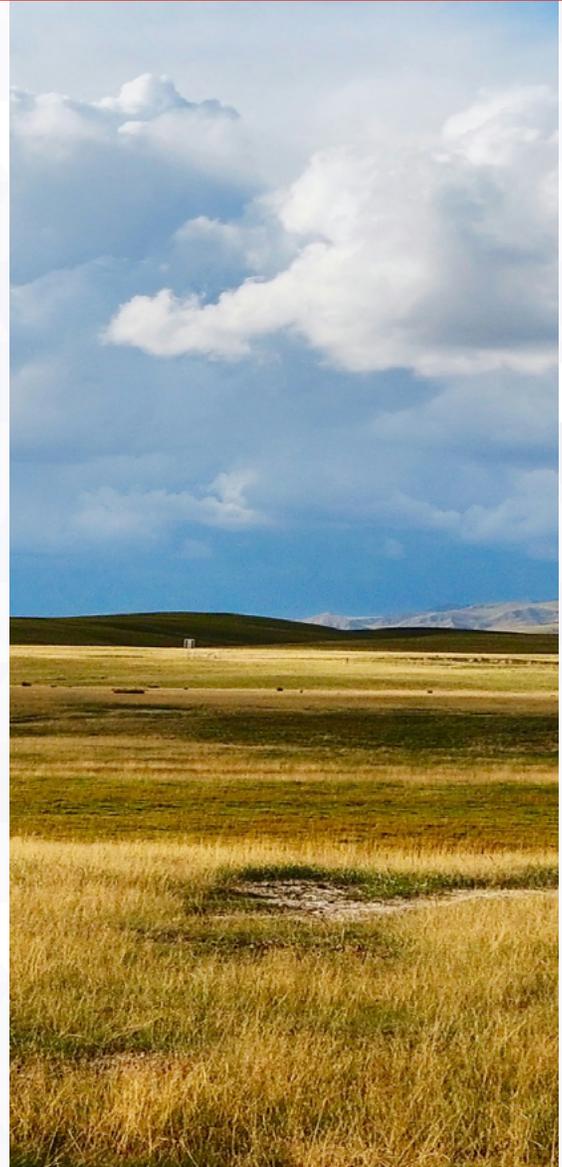
Advancements in healthcare, economic development, and public health initiatives have driven a dramatic increase in global life expectancy. In 1900, the average lifespan was just 32 years—a figure that doubled to 64 by 1990 and reached 73 in 2019. Current projections indicate that by 2050, life expectancy in some countries could climb to 85 years, with the most significant growth occurring among centenarians (those aged 100+). In fact, research suggests that 50 percent of newborns in developed nations (2007 cohort) may live to 100.⁴⁵

This trend has profound implications for labour market participation and retirement. In the European Union, the projected working lifespan has already increased to 36.9 years—a two-year rise over the past decade. While the current average retirement age in developed countries stands at 64, forecasts suggest it could reach 77 by 2050, reflecting both longer lifespans and evolving labour market demands.⁴⁶

PRODUCTIVITY IMPLICATIONS

The dramatic increase in life expectancy and the associated extension of working life will reshape how people work and live. This will shift from a life-stage learning perspective linked to certified learning. The traditional boundaries between work and personal life will continue to blend as individuals move in and out of the labour force.

Today's closed learning model does not possess the capacity or agility to deliver continuous learning for a fifty-year working life.



⁴⁵ For further information see World Health Organization, 2020; WHO, Dattani et al., 2023; National Institute on Aging, 2022; Cohen, 2023.

⁴⁶ For further information see European Commission, 2024; Cohen, 2023; Gratton & Scott, 2016.

FIGURE 11: THE SHIFT TO CONTINUOUS LEARNING



The average retirement age in developed countries today is 64; however, forecasts project this to be as high as 77 by 2050.

The Shift to Continuous Learning

The prevailing learning model (Figure 10) remains firmly rooted in its 19th-century industrial origins. It operates on principles such as batch processing (e.g., grouping students by age), standardized delivery (e.g., uniform face-to-face instruction), and quality assurance through conventional assessments. Under this system, students follow a fixed curriculum—typically starting around age five and continuing through late adolescence (ages 16-18)—designed to cultivate foundational human capital, including core literacies and problem-solving competencies, as measured by high-stakes standardized tests.

School systems vary in their priorities: some emphasize quantifiable outcomes like grades and key performance indicators, while others prioritize social-emotional learning, engagement, and student agency. As learners transition into young adulthood (typically ages 17-21), the model shifts toward developing task-specific competencies intended to be monetized over an individual’s working life. For nearly a century, this closed-loop system functioned effectively—when the average

career spanned thirty years and the demand for specific competencies remained relatively stable.⁴⁷

Blending Work and Personal Lives

The extension of working life to 50 years or more, combined with rapid technological advancements, which have dramatically reduced the half-life of some task-specific abilities to less than three years, has necessitated continuous retraining of many employees to sustain their economic relevance. Today’s closed learning model does not possess the capacity or agility to deliver continuous learning for a fifty-year working life. The solution to this challenge is an expanded open, continuous learning model that integrates all modes of certified, non-certified, and informal learning by decoupling development pathways and assessment – a cycle of open, continuous learning and recognition. Such a learning model shifts the 19th-century industrial education paradigm anchored to an age model to an open, continuous learning paradigm empowering individuals to map personalized development pathways aligned to their personal and professional goals.⁴⁸

⁴⁷ For further information see Murgatroyd, 2024; Murgatroyd & Sahlberg, 2016; Brown, 2021; Lane & Griffiths, 2023.

⁴⁸ For further information see Malik, 2021; World Economic Forum, 2023; Robinson, 2015; Castano et al., 2013.

FORCE 6

FROM JOBS TO COMPETENCIES

Competencies have traditionally been divided into two categories: task-specific and enabling. Task-specific competencies encompass the knowledge, skills, values, experience, and abilities required for specialized roles, such as accounting or warehouse management. In the past, employers prioritized these competencies for their direct economic value, often hiring employees for fixed roles with clearly defined career trajectories.

In contrast, enabling competencies, such as problem-solving, communication, and collaboration, equip individuals to adapt to a wide range of professional and personal contexts.

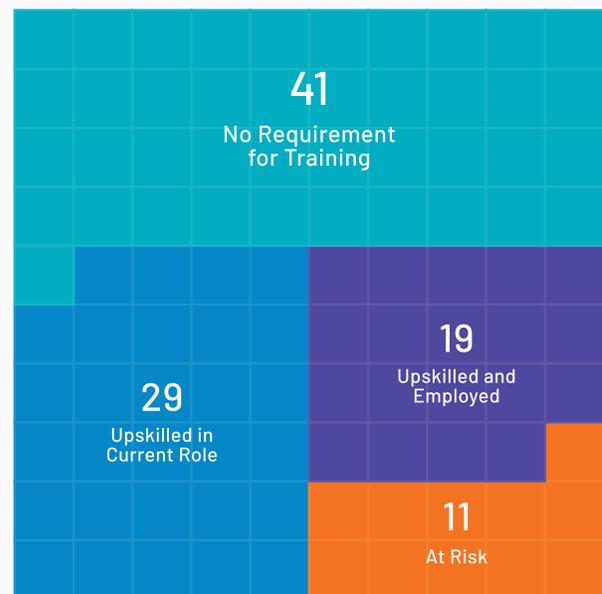
However, rapid technological advancements are shortening the lifespan of task-specific competencies. According to the World Economic Forum (Figure 11), in a hypothetical global labour market of 100 people, 29 would need upskilling in their current roles, 19 would require retraining for entirely new positions, and 11 would receive no training at all, leaving them exposed to labour market instability. This shift means that organizations relying solely on narrow, role-specific competencies risk structural inertia, limiting their ability to adapt to emerging demands.⁴⁹

The most in-demand competencies for 2025—analytical thinking, resilience, leadership, and empathy—all fall under the category of enabling competencies (Figure 12). Meanwhile, the fastest-growing areas include technological literacy, AI, and cybersecurity, highlighting the need to integrate enduring human competencies with cutting-edge technical expertise.

The World Economic Forum contends that if the global workforce were composed of 100 people, 59 would require training within five years.

This trend underscores a critical insight: enabling competencies are no longer optional but essential. They provide the foundation for continuous learning, allowing employees to evolve alongside rapidly changing task-specific requirements. For businesses, this means prioritizing adaptable, future-ready talent to maintain competitiveness in an era of constant disruption.

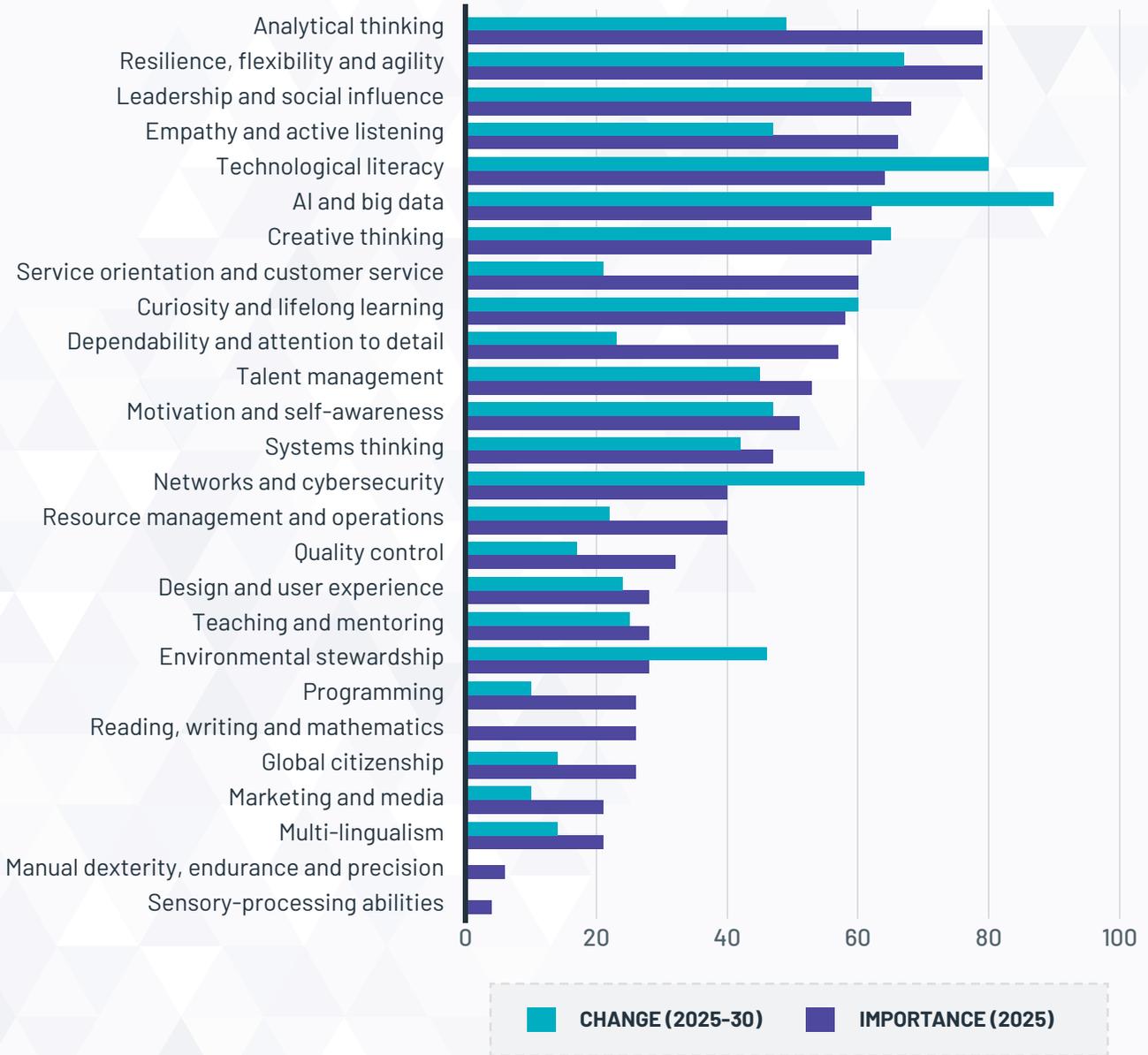
FIGURE 12: TRAINING DEMAND 2025-2030



Source: World Economic Forum, Future of Jobs Survey 2024.

⁴⁹ For further information see Susskind, 2022; Di Battista, et al., 2025; Lengnick-Hall & Beck, 2016.

FIGURE 13: COMPETENCY DEMAND CHANGE 2025-30 (% EMPLOYERS)



PRODUCTIVITY IMPLICATIONS

Some researchers argue that we have entered an era in which sustainable competitive advantage is no longer achievable. Instead, competitive advantage now hinges on agile adaptation to VUCA market conditions. In the face of a VUCA future, organizations and regional labour markets must be capable of reconfiguring their resources to address emerging threats and opportunities. A key implication of this shift will be a profound move from a traditional “job” perspective toward developing competencies that provide the essential agility needed to sustain a competitive position. There are two significant implications for the labour market: (1) hiring for adaptive and absorption capacity; and (2) expanding boundary-spanning roles.

Hiring for Adaptive Capacity

Adaptive capacity has become a foundational competency for many employers. Research demonstrates that employers prioritize candidates with flexibility, resilience, and the capacity to thrive in a VUCA world. A McKinsey study found that 70 percent of employers prioritize enabling competencies over task-specific competencies.⁵⁰ Additionally, studies show that individuals with high adaptive capacity enhance team dynamics and contribute to workplace resilience, as they possess the intuitive expertise necessary to navigate complex decision-making processes and emergencies. Employers recognize that hiring adaptable employees fosters innovation and creativity, enabling teams to develop new solutions that meet evolving customer needs. Furthermore, critical traits such as emotional intelligence and prior experience with

change have been identified as key indicators of an individual's adaptive capacity.⁵¹

Expansion of Boundary-Spanning Roles

To successfully transition from rigid job structures to a competency-based model, organizations must embrace more flexible, boundary-spanning roles. This shift requires reassessing traditional occupational boundaries and empowering employees to tailor their responsibilities based on their expertise, interests, and evolving workplace demands.

For example, job sharing—a boundary-spanning approach—enables individuals to collaboratively fulfil what was traditionally a single role, leveraging their unique strengths. However, scaling such practices demands a “boundaryless career mindset,” where employees thrive beyond conventional organizational and occupational constraints. This mindset prioritizes adaptability, continuous learning, and self-driven career development, enabling professionals to navigate dynamic work environments with agility.

These changes have profound implications for labour market structures, particularly in unionized settings, where employment contracts and role definitions may need renegotiation to accommodate greater flexibility.⁵²

Impacts on Foresight Planning

The shift from a job-centric to a competency-centric labour market will fundamentally reshape foresight planning. Employers, learning providers, and policymakers must evolve from forecasting traditional job roles or certified learning seats to anticipating competency supply and demand. This transition introduces new challenges in aligning individuals' competencies with employer needs, particularly in volatile labour markets experiencing economic disruption and competency mismatches, where shortages and surpluses coexist.

⁵⁰ From Bloom et al., 2022.

⁵¹ For further information see Castillo & Trinh, 2019; Finch et al., 2023; McKinsey, 2018; Breevaart & Bakker, 2018; Gonzalez-Mule & Aguinis, 2018; Yang & Liu, 2019.

⁵² For further information see Marrone et al., 2022; Makarius et al., 2024; Wiernik & Kostal, 2019.

Declining employer-employee loyalty reflects broader structural shifts in work arrangements. Traditional labour market distinctions—such as employed versus self-employed—fail to capture the growing complexity of modern careers. Many individuals now engage in hybrid work models, balancing full-time employment with side ventures or contract work. Additionally, pandemic-driven workplace flexibility has enabled employees to access entrepreneurial benefits previously reserved for independent workers.

Research demonstrates that employers prioritize candidates with flexibility, resilience, and the capacity to thrive in uncertain situations. A McKinsey study found that 70 percent of employers prioritize enabling competencies over task-specific competencies.

As the lines between traditional employment and entrepreneurship blur, entrepreneurial thinking becomes a critical competency, whether within startups, established organizations, or hybrid work arrangements. Businesses must integrate this mindset into talent development strategies to remain competitive in a dynamic labour market.⁵³

⁵³ For further information see Lane & Griffiths, 2023; International Labour Organization, 2022.



FORCE 7

RISK MANAGEMENT

Attracting and retaining talent has become a defining challenge for organizations globally. Central to this challenge is the growing difficulty of verifying candidates' competencies and credentials—a high-risk process exacerbated by eroding institutional trust.

The rise of technology-driven recruitment, fragmented credentialing systems, and intensifying global competition for talent has made hiring decisions increasingly complex (Figure 13). In the U.S., where over two million university degrees are awarded annually and 51.3 percent of adults hold some form of degree or certification, the prevalence of fraudulent credentials further undermines trust. An estimated 1,000 diploma mills operate in the U.S. alone, complicating verification efforts, particularly as cross-border talent mobility demands more rigorous international credential assessments.⁵⁴

To manage these risks, organizations deploy a mix of institutional and social verification methods.

Institutional verification—such as validating professional licenses, educational credentials, or real-time competency assessments—relies on trust in third-party certifying bodies. In contrast, social verification, like professional references, depends on the credibility of individuals vouching for a candidate. While widely used, social verification introduces systemic biases that can distort hiring outcomes and limit labour market productivity.

As these pressures mount, businesses must rethink traditional verification approaches to balance rigour, scalability, and fairness in talent acquisition.

PRODUCTIVITY IMPLICATIONS

Introducing new verification proxies is a logical response to managing the risk embedded in the recruitment process. However, these ad hoc risk management mechanisms can amplify systemic bias, increased inefficiency, and require significant manual intervention to secure and verify.

FIGURE 14: HIRING RISK MANAGEMENT MECHANISMS



⁵⁴ For further information see Cascio & Aguinis, 2022; Aguinis et al., 2021; van Esch & Black, 2023; Kato et al., 2020; Worth, 2011; Lumina Foundation, 2025; Park & Craddock, 2017; Hawthorne, 2016.

Amplifying Systemic Bias

Many current risk management practices that employers use to assess candidate competency rely on proxies that serve as weak indicators of actual capability while reinforcing systemic biases. A common example is the use of post-secondary credentials as a stand-in for assumed enabling or job-specific competencies. However, access to post-secondary education remains a privilege tied to socioeconomic advantages, including parental education levels and financial stability. When employers require a four-year degree as a measure of competency, they inadvertently favour candidates with generational privilege, systematically excluding a substantial segment of the labour market, particularly those from marginalized communities.

Fraudulent academic credentials exacerbate verification challenges, especially with the increase in global labour mobility demanding international credential assessment and verification.

Similarly, advocacy-based verification methods, such as professional references, perpetuate systemic inequities tied to education, income, social status, gender, and race. These references are often contingent on social access, which is shaped by structural advantages. For instance, post-secondary education frequently serves as a gateway to influential professional networks that lead to higher-income and higher-status roles. As a result, relying on professional references as a competency benchmark disproportionately benefits those with preexisting societal advantages. Research underscores this disparity, showing that racialized candidates must submit 50 percent more applications than their non-racialized counterparts to secure an interview—a gap exacerbated by additional structural barriers, such as the undervaluation of foreign credentials.⁵⁵

The rise of generative AI in creative industries introduces another layer of risk by decoupling creative output from human accountability. Historically, creative professionals bore responsibility for their work, ensuring that judgment and ethics were inherently tied to performance. Generative AI disrupts this dynamic, separating capability from accountability and raising concerns around intellectual property infringement, misinformation, and embedded bias. To address these challenges, forward-thinking organizations are developing robust AI risk management frameworks, investing in training for ethical AI deployment, and establishing clear policies to define accountability for AI-generated content. Such proactive strategies are essential to mitigating the risks introduced by the growing reliance on generative AI in the workplace.

⁵⁵ For further information see Zschirnt et al., 2016; Damelang et al., 2020.

Demand for Harmonized Open Continuous Learning

Employers are increasingly seeking more efficient and inclusive methods to verify competencies, driven by the limitations of traditional credentialing systems. In response, open, continuous learning has emerged as a transparent framework for validating competencies, regardless of how or where they were acquired.

Open recognition aims to democratize credentialing by acknowledging competencies gained through both formal and informal pathways. It fosters peer-based validation within professional communities while reducing barriers for marginalized groups who may lack access to certified learning. Early implementations, such as open digital badges, have shown potential but face challenges, particularly in maintaining rigour. Without robust assessment mechanisms, peer endorsements can lack credibility, and the system remains vulnerable to misuse.

Open, continuous learning requires standardized, verifiable credentialing models to scale effectively. Open badging represents a significant evolution, embedding rich metadata, such as issuer details, earning criteria, and evidence of competency, into digital tokens. However, ensuring long-term trust and scalability demands further innovation.

Researchers highlight blockchain technology as a key enabler for secure, transparent credentialing. Its decentralized and immutable ledger ensures that competency assessments are tamper-proof and traceable. By integrating blockchain with open badging, organizations can embed verifiable proof of competencies—creating a more reliable and portable system for talent validation.⁵⁶



When employers establish a four-year degree as a competency proxy, they systemically reward candidates with generational advantages.

⁵⁶ For further information see Lane & Griffiths, 2023; West & Cheng, 2023; Jirgensons & Kapenieks, 2018; Tapscott & Tapscott, 2018.

FORCE 8

THE RISE OF CONTINGENT LABOUR

In recent years, organizations have undergone a significant structural shift, embracing hybrid labour models that blend permanent full-time employees (FTEs) with contingent workers—including temporary staff, contractors, and independent professionals. This approach enables businesses to scale their labour force dynamically in response to market fluctuations while maintaining a lean core of FTEs. Beyond operational agility, the model fosters innovation by integrating diverse perspectives and skill sets.

The contingent labour market is expanding rapidly. As of 2022, nearly 871,000 Canadians relied on contract work as their primary income source, and projections suggest that by 2025, contingent workers could represent up to 35 percent of Canada's labour market (Figure 14). These workers fall into distinct categories: casual earners, the largest segment, who pursue contract work for supplementary income; and reluctant and the financially strapped, who turn to contingent work out of necessity. This latter group tends to be younger, more racially diverse, and includes non-citizens, underscoring socioeconomic vulnerabilities.

Digital platforms have been key enablers, connecting contractors with opportunities across technology, healthcare, and creative industries. Between 2016 and 2023, Canada's self-

employed freelancers and contractors doubled from 1.2 million to 2.7 million. The pandemic further accelerated this trend, as remote collaboration tools made contingent labour more viable. In a McKinsey survey of 800 global executives, 70 percent indicated plans to leverage contingent labour to navigate a VUCA future.⁵⁷

Despite its advantages, contingent work remains precarious. Contractors often face higher job instability, limited benefits, and fewer labour protections—issues highlighted during pandemic-era layoffs. While some workers choose contingent roles for flexibility, others are driven by financial need, underemployment, or a lack of alternatives.

Open recognition aims to acknowledge an individual's competency, regardless of how or where it was acquired.

Globally, contingent workers are advocating for stronger rights through legal channels. In the U.K., courts have ruled that workers on “zero-hours” contracts are entitled to guaranteed hours after consistent service. Similarly, Canadian gig workers—such as drivers for Uber, DoorDash, and similar platforms—are securing expanded protections, with reforms progressing province by province.

As hybrid labour force models become entrenched, organizations must balance flexibility with equitable labour practices. Businesses that proactively address the challenges of contingent labour, while harnessing its strategic benefits, will be better positioned to thrive in an evolving economic landscape.

⁵⁷ For further information see Finch et al., 2015; Muduli, 2016; Statistics Canada, 2003; Ferguson, 2010; Statistics Canada, 2024; True North, 2024; LMIC-CIMT, 2023; Kuhn, 2016; Statistics Canada, 2017; Statistics Canada, 2024.

PRODUCTIVITY IMPLICATIONS

Integrating contingent labour into the market presents numerous opportunities and challenges, including enhanced flexibility, cost savings, access to specialized competencies, and increased innovation.

Increased Flexibility

The use of contingent labour equips organizations with the capability to adjust their labour force based on rapidly fluctuating demand. This dynamic is particularly advantageous in hospitality, retail, higher education, and seasonal businesses, where staffing requirements may shift quickly. Contingent employment enhances organizational responsiveness, allowing enterprises to scale their labour force efficiently without the prolonged recruitment processes associated with permanent hires..

As of 2022, "gig work" alone involved a significant portion of the workforce, with nearly 871,000 Canadians relying on it as their primary income source.

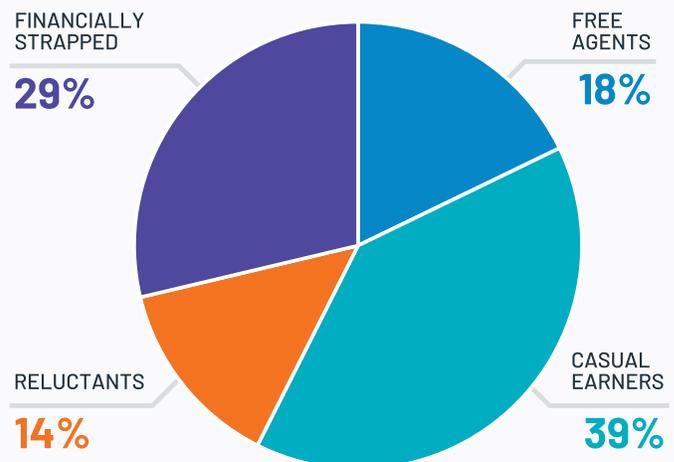
Cost Savings

Firms can realize notable cost savings through the employment of contingent workers. They can strategically allocate resources by avoiding expenses linked to full-time employees, such as health benefits, retirement contributions, and unemployment insurance. Contingent labour allows organizations to maintain flexibility in labour costs and reduce overall financial commitments, which is particularly crucial for startups and small businesses operating within constrained budgets..

Access to Specialized Competency

The expansion of contingent labour has facilitated organizations' access to highly specialized competencies. Engaging contingent workers enables organizations to harness expertise for specific projects without the long-term obligation of permanent hires. This phenomenon is particularly salient in sectors such as technology, higher education, training, marketing, and creative services, where distinct competencies are frequently required for brief periods. The ability to bring in specialized talent as needed can enhance the quality of outputs and drive innovation. Additionally, contingent workers' diverse perspectives and experiences can stimulate organizational creativity and innovation, fostering an environment conducive to novel ideas and solutions..

FIGURE 15: CONTINGENT LABOUR IN CANADA BY MOTIVATION



Source: Quality of Work of Canada's Contingent Workforce, Future Skills 2023.



PREPARING FOR THE COMING STORM

The eight forces are profoundly reshaping the landscape of regional economies. A region's competitive advantage is no longer dictated solely by its access to natural resources; it is now rooted in its labour force. The implications of these systemic forces demand a systemic response from regional policymakers, employers, credentialing bodies, learning providers, and individuals. None of these stakeholders possesses the capacity to respond individually. Instead, a collaborative and coordinated response is needed. The preferred

response demands re-envisioning the nature of learning and recognizing that traditional education systems, while essential, are only a tiny component of a region's rich but fragmented learning system. Below, we summarize each stakeholder group's current and future role.



INDIVIDUAL

Current Role

Working Life: Working life for most is between 35 and 40 years.

Learning Ladder: Social conditioning reinforces learning as a life stage. Conditioned to pursue credentials to secure future employment.

Systemic Inequities: The existing learning paradigm reinforces systemic inequities.

Pursue Jobs: Social conditioning establishes a goal of pursuing a job and a career.

Separate Lives: For most, professional lives and personal lives remain distinct.

Future Role

Working Life: Most work extends to between 50 and 60 years.

Adaptive Capacity: Adaptive capacity has become a foundational competency as employers prioritize candidates with flexibility, resilience, and the capacity to thrive in a VUCA future.

Continuous Learning: Adaptive capacity empowers continuous learning. This model empowers individuals to map personalized development pathways aligned with their personal and professional goals.

Unlock Potential: The open learning model unlocks labour force potential by removing systemic inequities.

Blurred Lives: Traditional boundaries between work and personal life will continue to blur as people enter and leave the labour force. Extended working lives introduce mid-career sabbaticals.



LEARNING PROVIDER

Current Role

Industrial Education: The current learning and labour market model remains deeply rooted in a 19th-century industrial education framework that ties learning to age. Life expectancy has doubled significantly since 1900, leading to an extended working life.

Inflexible System: The current learning system remains occupation-centric, developing and identifying competencies anchored to an occupation. This results in an inflexible labour market with a competency surplus and a competency shortage.

Lack of Agility: Existing certified learning systems do not possess the agility to adapt to dynamic names.

Future Role

Open Learning: Open learning unlocks the potential of a complete learning system. The unbundling of learning pathways and assessment establishes a transparent, harmonized blockchain-enabled open recognition system embedding competency assessment.

Prioritizing Adaptive Capacity: Adaptive capacity has become a foundational system competency, especially in K-12. This prioritizes developing the capacity to learn, unlearn, and relearn.

Task-Specific Competencies: Open learning incentivizes the expansion of innovative specialized learning providers to facilitate the continuous development of task-specific competencies.



CREDENTIALING BODY

Current Role

Industrial Education: Credentialing remains government-centric and anchored to the industrial learning ladder.

Occupation Centric: The current credentialing system remains occupation-centric.

Fragmentation and Legitimacy: Market pressures lead to the mass fragmentation of micro-credentials, each with decreasing perceived legitimacy by employers. This, in turn, incentivizes employers to use proxies to manage risk.

Future Role

Automation and Assessment: Automation is increasing the productivity and rigour of competency assessment, removing a significant barrier to scaling and creating a path for harmonized open recognition. This will unlock the capacity of non-certified and informal learning pathways and individuals in the labour market with high-valued competencies but no associated credentials. The result is a labour market that shifts from credentials to competencies.



Current Role

Inertia: Policymakers recognize that the current learning system is not delivering on emerging demands, but the scope of the changes and political risk contribute only to incremental changes.

Economics: The continued incremental changes to the industrial model led to an unsustainable business model. Attempts to pursue alternative revenue streams (e.g., international students) increased risk and diluted outcomes.

Systemic Inequities: The existing learning paradigm reinforces systemic inequities in the labour market.

Contingent Labour: The rapid rise of contingent labour has led to a lag in policy expansion, exposing some labour market segments.

Task-Specific Prioritization: Policymakers prioritize task-specific competencies because they can deliver immediate economic value and short-term political wins.

Future Role

Open Learning: Introduce open learning to unlock the potential of the entire learning system. The unbundling of learning pathways and establishing a transparent, harmonized, blockchain-enabled open recognition system embedding competency assessment.

Continuous Learning Funding: The introduction of open learning shifts funding from institutions to individuals through continuous learning accounts. This funding empowers individuals to invest in their unique learning pathways. The increased learning pathway competition reduces budget pressures.

Prioritizing Adaptive Capacity: Policymakers prioritize adaptive capacity as a foundational system competency, especially from K-12. This prioritizes developing the capacity to learn, unlearn, and relearn.

Task-Specific Competencies: Open learning policies incentivize the expansion of innovative specialized learning providers to facilitate the continuous development of task-specific competencies.

Unlock Potential: The open learning model unlocks labour force potential by removing systemic inequities.

Contingent Labour: Policymakers introduce policies to support contingent labour while maximizing the flexibility that individuals and employers seek.

Current Role

Competency Mismatch: Growing competency mismatch intensifies talent competition.

Proxy Dependent: Recruitment is a risk management exercise. Firms have adopted various proxies to manage this risk, ranging from amplifying demand for credentials to professional references.

Systemic Bias: In practice, these proxies play little role in managing risk; however, they play a significant role in deepening systemic labour market biases and suppressing opportunities.

Task-Specific Prioritization: Many employers prioritize task-specific competencies because they can deliver immediate economic value to an organization. Hence, organizations hire specific jobs (e.g., accountant), and these individuals could maintain a relatively linear occupation-centric pathway.

Professional Development: Most professional development is limited to larger organizations with training budgets. Smaller firms, representing 75 percent of the labour market, underinvest because it is perceived as a cost out of fear of incentivizing employee churn.

Future Role

Adaptive Prioritization: Adaptive capacity has become a foundational competency for many employers, as employers prioritize candidates with flexibility, resilience, and the capacity to thrive in a VUCA future.

Adaptive Roles: Firms shift from conventional job structures to emphasizing more flexible, boundary-spanning roles. Shift from forecasting jobs to forecasting competency supply and demand.

Competency Verification: Risk management plays a critical role in the recruitment process, but open learning establishes a blockchain-enabled open recognition system, including a harmonized standard for visual tokens with a rich, defined metadata structure. This allows employers to have transparent access to evidence and demonstrate relevant competence.

Employers Adapt: Employers develop highly flexible and fluid on- and off-ramps for staff to support ongoing development.

WHERE TO START

The greatest challenge facing economic regions lies not in external factors but in the embedded rules, routines, practices, and cultures that influence mindsets and behaviours. For this reason, the most straightforward response is to do nothing. However, doing nothing will exacerbate the problem. To get started, we recommend the following:

Individuals

Feed intentional curiosity. Establish personal and professional goals and a holistic learning plan to achieve them. This plan should leverage the diverse certified, non-certified, and informal learning pathways. The most important thing to remember is that a goal is a hypothesis to be tested and refined with evidence. This is intentional curiosity – curiosity with a purpose. Having the mindset and capacity to adapt is the superpower of the future.

Learning Providers

Recognize open learning. The first step for learning providers is to recognize the power of open learning. Open learning includes every podcast, volunteering opportunity, or recreational experience, which can be as powerful as a textbook and classroom. A critical part of this first step is to develop the tools and supports to stimulate intentional curiosity. Stimulating this intentional curiosity will empower individuals to find their unique learning pathways.

Credentialing Bodies

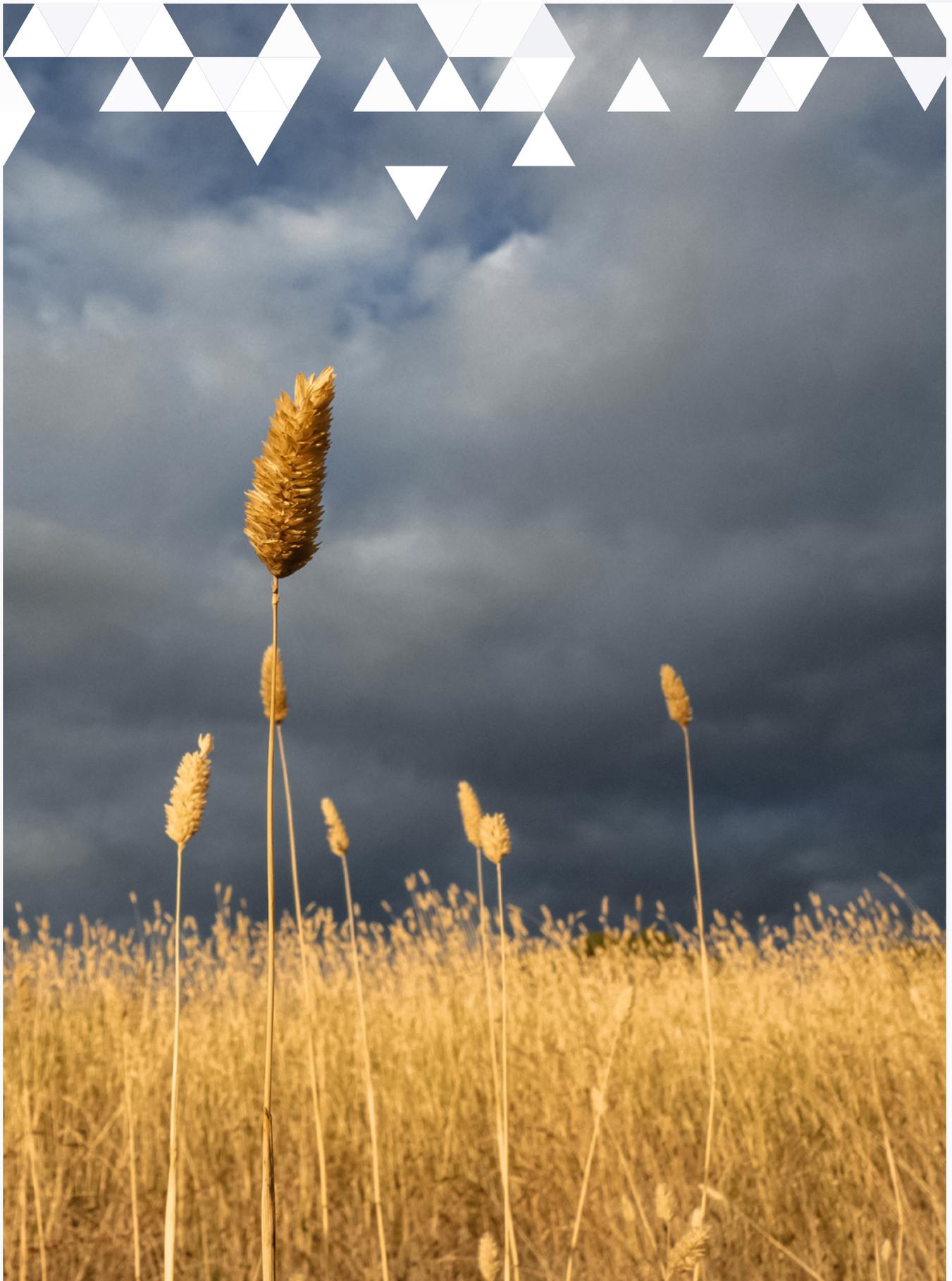
Be part of a bigger solution. Open and continuous learning is founded on open and continuous competency assessments. Credentialing bodies have the expertise and experience to lead the development of rigorous and trusted competency assessment models. However, this starts by recognizing that an open future begins with a collaboration-first mindset. Do not become part of the problem by further fracturing an already fragmented assessment system. Become part of the solution by collaborating on open solutions.

Policymakers

Recognize open learning. As supporters of the labour market development system, policymakers at all levels need to recognize open learning. An important first step is to map the stakeholders in the open learning system and become the bridge to empower collaboration. Doing so requires policymakers to recognize that an investment in the structural capital that connects the system has a multiplier impact. This important step will form the foundation of a re-envisioned open learning system designed to develop empowered, adaptable citizens.

Employers

Think bigger. Employers are no longer customers of the traditional learning system but co-creators in a human capital ecosystem. The first step forward is to recognize the importance of collaborating across the system, whether with other employers, learning providers, credentialing bodies, or policymakers. This means investing in learning far earlier and more sustainably, which may involve collaboration with experiential learning in high schools and universities or developing existing employees.



THE PATH FORWARD

This report is the first of six in Series 1—Productivity and People. This series presents six compelling studies developed by a diverse team of experts from academia, professional practice, and policymaking. Each report contributes to the question: How can human capital drive Canada’s productivity?

TABLE 1: PATH TO AN ADAPTIVE LABOUR FORCE

REPORT	FOCUS
Productivity and People: Exploring Human Capital’s Role in Productivity	Report 1 establishes the foundational relationship between human capital and productivity, presenting a conceptual framework that informs the entire series. It examines how the development of human capital contributes systematically to productivity growth.
The Coming Storm: Forces Reshaping Regional Labour Markets	Report 2 identifies and analyzes eight macro-level forces shaping labour markets, from technological disruption to demographic shifts. It evaluates their collective implications on labour productivity and proposes strategies to mitigate challenges while capitalizing on emerging opportunities.
Unlocking Productivity: Path to a Human Capital Supply Chain	Report 3 advances supply chain principles by proposing a dynamic human capital supply chain network. This model optimizes labour market alignment, ensuring competency supply meets demand efficiently to drive productivity gains across an economy.
Untapped Potential: Mapping the Human Capital Ecosystem.	Report 4 assesses the outcomes of a pilot project mapping supply and demand within an open learning system. Its findings underscore the importance of synchronizing learning outputs with labour market needs to sustain long-term productivity growth.
The Risk of Managing Risk: The Challenge of Competency Verification	Report 5 scrutinizes hiring practices through a risk management lens, revealing systemic biases in employer decision-making. By dissecting these barriers, actionable approaches to enhance fairness and productivity in talent acquisition are highlighted.
A Path to Open Learning: A Policy Framework for Enabling Incumbents and Empowering New Entrants	Report 6 evaluates Canada’s public post-secondary system as a natural monopoly, exposing its constraints on innovation and competition. It introduces a framework for an open learning marketplace designed to foster flexibility and productivity growth.

BIBLIOGRAPHY

- Acemoglu, D., & Restrepo, P. (2019). Automation and new tasks: How technology displaces and reinstates labour. *Journal of Economic Perspectives*, 33(2), 3-30.
- Akan, M., Barrero, J. M., Bloom, N., Bowen, T., Buckman, S., Davis, S. J., ... & Wilke, L. (2024). Americans Now Live Farther from Their Employers. *Unpublished Manuscript*.
- Amir, R. (2024). Measuring regional competitiveness through the regional development index. *Gorontalo Development Review*, 7(2), 196-210.
- Benoit, B. (2024, September 2). Europe's populist surge is not only about immigration; it is about fading trust. *The Wall Street Journal*. <https://www.wsj.com/world/europe/europes-populist-surge-isnt-only-about-immigration-it-is-about-fading-trust-a3caff0d>
- Blair, P. Q., Castagnino, T. G., Groshen, E. L., Debroy, P., Auguste, B., Ahmed, S., Garcia Diaz, F., & Bonavida, C. (2020). *Searching for STARS: Work experience as a job market signal for workers without bachelor's degrees* (Working Paper No. 26844). National Bureau of Economic Research. Retrieved from <https://www.nber.org/papers/w26844>
- Braxton, J. C., & Taska, B. (2023). Technological change and the consequences of job loss. *American Economic Review*, 113(2), 279-316. <https://doi.org/10.1257/aer.20210182>
- Breevaart, K., & Bakker, A. B. (2018). The Role of Adaptive Capacity in Employee Well-Being. *Journal of Occupational Health Psychology*, 23(3), 378-391.
- Brown, C. (2021). *Skill Development and Economic Value in Education*. Academic Press.
- Cascio, W. F., & Aguinis, H. (2022). *Applied Psychology in Talent Management* (8th ed.). SAGE Publications.
- Castillo, E. A., & Trinh, M. P. (2019). Catalyzing capacity: absorptive, adaptive, and generative leadership. *Journal of Organizational Change Management*, 32(3), 356-376.
- Cohen, C. (2023, October). Tips for Navigating a 60-Year Career. *Harvard Business Review*. Retrieved from <https://hbr.org/2023/10/tips-for-navigating-a-60-year-career>
- Conference Board of Canada (2025). The. From Shortages to Solutions: Tackling Canada's Critical Gaps in Healthcare, Trades, and Tech. Ottawa: *The Conference Board of Canada*. Retrieved from https://www.conferenceboard.ca/product/tackling-canadas-critical-skill-gaps_mar2025/
- Damelang, A., Ebensperger, S., & Stumpf, F. (2020). Foreign credential recognition and immigrants' chances of being hired for skilled jobs—evidence from a survey experiment among employers. *Social Forces*, 99(2), 648-671.
- Dattani, S., Rodés-Guirao, L., Ritchie, H., Ortiz-Ospina, E., & Roser, M. (2023). Life Expectancy. Our World is in Data. Retrieved from <https://ourworldindata.org/life-expectancy#:~:text=In%201900%2C%20the%20average%20life,data%20on%20life%20expectancy%20worldwide>
- Davis-Kean, P. E. (2005). Parent education and family income influence child achievement: the indirect role of parental expectations and the home environment—*Journal of Family Psychology*, 19(2), 294.
- Department of Education (2025, March 10). U.S. Department of Education's Office for Civil Rights Sends Letters to 60 Universities Under Investigation for Antisemitic Discrimination and Harassment. *United States Department of Education*. Retrieved from <https://www.ed.gov/about/news/press-release/us-department-of-educations-office-civil-rights-sends-letters-60-universities-under-investigation-antisemitic-discrimination-and-harassment>
- Demirci, O., Hannane, J., & Zhu, X. (2024, November 11). Research: How Gen AI is already impacting the labor market. *Harvard Business Review*. <https://hbr.org/2024/11/research-how-gen-ai-is-already-impacting-the-labor-market>

- Di Battista, A., Grayling, S., Jativa, X., Leopold, T., Li, R., Sharma, S. & Zahidi, S. (2025, January). Future of Jobs Report 2025. *World Economic Forum*, Geneva, Switzerland. Retrieved from <https://www.weforum.org/publications/the-future-of-jobs-report-2025/>
- Di Battista, A., Grayling, S., Hasselaar, E., Leopold, T., Li, R., Rayner, M., & Zahidi, S. (2023, January). Future of Jobs Report 2023. In *World Economic Forum*, Geneva, Switzerland. <https://www.weforum.org/reports/the-future-of-jobs-report-2023>
- Dingel, J. I. (2020). How Many Jobs Can Be Done at Home? *Journal of Public Economics*. 189.
- Edelman. (2024). *Innovation in Peril: 2024 Edelman Trust Barometer*. Edelman. Retrieved from <https://www.edelman.com/trust/trust-barometer>
- Edelman. (2025). *Trust and the crisis of grievance: The 2025 Edelman Trust Barometer*. Edelman. Retrieved from <https://www.edelman.com/sites/g/files/aatuss191/files/2025-01/Global%20Top%2010%202025%20Trust%20Barometer.pdf>
- Emery, M., & Flora, C. (2006). Spiralling-up: Mapping community transformation with community capitals framework. *Community Development*, 37(1), 19–35.
- European Commission (2024). *Duration of working life*. European Commission, Retrieved from: https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Duration_of_working_life_-_statistics
- Ferguson, R. (2010). The Impact of the Recession on Temporary Employment in Canada. *Canadian Industrial Relations Association*.
- Finch, D. J., Levallet, N., Saunders, C., Field, E., Ribeiro, J., Raby, S., ... & Campbell, A. (2023). A dynamic capability view of career adaptation: an exploratory study. *Education+ Training*, 65(5), 769–789.
- Finch, D. J., Peacock, M., Levallet, N., & Foster, W. (2016). A dynamic capabilities view of employability: Exploring the drivers of competitive advantage for university graduates. *Education+ Training*, 58(1), 61–81.
- Future Skills Centre (2023, June). *Quality of Work of Canada's Contingent Workforce*. Future Skills Centre. Retrieved from <https://fsc-ccf.ca/projects/canadas-contingent-workforce/>
- Gordon, K. (2012). Poor recruitment decisions: What is the cost impact to the organization? *National College of Ireland Repository*. Retrieved from https://norma.ncirl.ie/667/1/kevin_gordon_20120529174233.pdf
- Gonzalez-Mule, E., & Aguinis, H. (2018). “What Are the Implications of the Rise of AI for Employee Selection?” *Industrial and Organizational Psychology*, 11(1), 1–6.
- Government of Canada. (N.D.) *Definition of Competencies*. Government of Canada. Retrieved from <https://www.tbs-sct.canada.ca/tal/comp-eng.asp>
- Gratton, L., & Scott, A. (2016). *The Hundred-Year Life*. Bloomsbury Publishing.
- Gruzina, Y., Firsova, I., & Strielkowski, W. (2021). Dynamics of human capital development in economic development cycles. *Economies*, 9(2), 67.
- Guastella, G., & Timpano, F. (2016). Knowledge, innovation, agglomeration and regional convergence in the EU: Motivating place-based regional intervention. *Review of Regional Research*, 36, 121-143.
- Hawthorne, L. (2016). Foreign credential recognition and assessment: An introduction. *Social Science Research Network*. Retrieved from <https://papers.ssrn.com/sol3/Delivery.cfm?abstractid=2808951>

- International Labour Organization (2022). Exploration tool on Skills Mismatches. *International Labour Organization*. Retrieved from <https://www.ilo.org/resource/other/exploration-tool-skills-mismatches>
- Kato, S., Galán-Muros, V., & Weko, T. (2020). The Emergence of Alternative Credentials. OECD *Education Working Papers*, No. 216. OECD Publishing.
- Knox, L. (2025, March 28). Trump Administration Revokes 300 Student Visas. *Chronicle of Higher Education*. Retrieved from <https://www.insidehighered.com/news/quick-takes/2025/03/28/trump-administration-revokes-300-student-visas-more-come>
- Kotsantonis, S., & Serafeim, G. (2020). Human capital and the future of work: Implications for investors and ESG integration. *Journal of Financial Transformation*, 51, 115-130.
- Kuhn, K. M. (2016). The rise of the “gig economy” and implications for understanding work and workers. *Industrial and Organizational Psychology*, 9(1), 157-162.
- Lane, J. & Griffiths, J. (2023). Matching People with Jobs & Jobs with People. *Canada West Foundation*. Retrieved from <https://cwf.ca/research/publications/report-matching-people-with-jobs-and-jobs-with-people/>
- Lanvin, B. & Monteiro, F. (2023). The global competitive index 2023. INSEAD. Retrieved from <https://www.insead.edu/system/files/2023-11/gtci-2023-report.pdf>
- Lengnick-Hall, C. A., & Beck, T. E. (2016). Resilience Capacity and Strategic Agility: Prerequisites for Thriving in a Dynamic Environment. In *Resilience Engineering Perspectives*, Volume 2 (pp. 61-92). CRC Press.
- LMIC-CIMT. (2023). Workforce 2025: The future of the world of work. LMIC-CIMT. Retrieved from <https://lmic-cimt.ca/future-of-work/randstad-2016-workforce-2025-the-future-of-the-world-of-work-2/>
- Lumina Foundation. (2025). A Stronger Nation. *Lumina Foundation*. Retrieved from <https://strongernation.luminafoundation.org/>
- Makarius, E. E., Dachner, A. M., Paluch, R. M., & Pedde, J. (2024). Feel the churn: Exercising talent management practices to support a climate for career mobility. *Business Horizons*, 67(1), 55-69.
- Malik, S. (2021). Skills Transformation for the 2021 Workplace. IBM. Retrieved from <https://www.ibm.com/blogs/ibm-training/skills-transformation-2021-workplace/#:~:text=Research%20suggests%20that%20skills%20generally,two%20and%20a%20half%20years>
- Marrone, J. A., Quigley, N. R., Prussia, G. E., & Dienhart, J. (2022). Can supportive coaching behaviors facilitate boundary-spanning and raise job satisfaction? An indirect-effects model. *Journal of Management*, 48(5), 1131-1159.
- McKinsey & Company. (2020, May 19). Diversity Wins: How Inclusion Matters. *McKinsey Insights*. Retrieved from <https://www.mckinsey.com/featured-insights/diversity-and-inclusion/diversity-wins-interactive>
- Moyser, M. (2019, August). Measuring and analyzing the gender pay gap: A conceptual and methodological overview. *Government of Canada*. Retrieved from: https://epe.lac-bac.gc.ca/100/201/301/weekly_acquisitions_list-ef/2019/19-35/publications.gc.ca/collections/collection_2019/statcan/452000022019001-eng.pdf
- Muduli, A. (2016). Exploring the facilitators and mediators of workforce agility: an empirical study. *Management Research Review*, 39(12), 1567-1586.

Mungoli, N. (2023). Exploring the synergy of prompt engineering and reinforcement learning for enhanced control and responsiveness in chat GPT. *Journal of Electrical Electronics Engineering*, 2(3), 201–205.

Murgatroyd, S. and Sahlberg, P. (2016). Two Solitudes of Educational Policy and the Challenge of Development. *Journal for Learning and Development*, 3(3): 29–36.

Murgatroyd, S. (2024). Interregnum: Disruption and the in-between time for higher education. *Journal of Open, Distance, and Digital Education*, 1(2), 1–14.

National Institute on Aging. (2022). *Global Aging: Challenges and Opportunities*. National Institute on Aging. Retrieved from <https://www.nia.nih.gov/research/dbsr/global-aging>

Open Recognition Alliance. (2021). The Open Recognition Framework. Open Recognition Alliance. Retrieved from <https://openrecognition.org/>

Osiobe, E. U. (2019). A literature review of human capital and economic growth. *Business and Economic Research*, 9(4), 179–196.

Park, H. & Craddock, A. (2017). Diploma Mills: 9 Strategies for Tackling One of Higher Education's Most Wicked Problems. *World Education News & Reviews*. Retrieved from <https://wenr.wes.org/2017/12/diploma-mills-9-strategies-for-tackling-one-of-higher-educations-most-wicked-problems>

Paschina, S. (2023). Trust in management and work flexibility: A quantitative investigation of modern work dynamics and their impact on organizational performance. *European Research Studies Journal*, 26(3), 184–196.

Picot, G., & Hou, F. (2019). *Skill Utilization and Earnings of STEM-Educated Immigrants in Canada: Differences by Degree Level and Field of Study*. Analytical Studies Branch Research Paper Series. Statistics Canada.

Porter, C. (2025, March 25). As Trump's Policies Worry Scientists, France and Others Put Out a Welcome Mat. *New York Times*. Retrieved from <https://www.nytimes.com/2025/03/25/europe-trump-science-research.html>

Quinn, R. (2025, March 25). Outspoken Fascism Scholars Leave Yale for Canada. *Chronicle of Higher Education*. Retrieved from <https://www.insidehighered.com/news/faculty-issues/academic-freedom/2025/03/26/fascism-scholars-trump-critics-leave-yale-canada>

Reitz, J. G. (2018). *Warmth of the Welcome: The Social Causes Of Economic Success In Different Nations And Cities*. Routledge.

Robert Walters Co (2024). *Hiring in Malaysia – Trends in 2025*. November 25th. Retrieved from <https://www.robertwalters.com.my/insights/hiring-advice/blog/country-overview-hiring-in-malaysia-trends-and-guide.html>

Sentner, I. & Quilantan, B. (2025, March 20). Universities are caving to Trump with a stunning speed and scope. *Politico*. Retrieved from <https://www.politico.com/news/2025/03/20/universities-cave-conservatives-trump-00241765>

Schwerdt, G., Wiederhold, S., & Murray, T. S. (2020). *Literacy and growth: New evidence from PIAAC* [mimeo]. Retrieved from <https://kops.uni-konstanz.de/server/api/core/bitstreams/89eacb96-62a8-480c-ae57-89ac6afa4928/content>

Statistics Canada (2024, September 17). *The Daily*. *Statistics Canada*. Retrieved from <https://www150.statcan.gc.ca/n1/daily-quotidien/240917/g-b003-eng.htm>

Statistics Canada (n.d.). *Learn more about foreign credential recognition in Canada*. Statistics Canada. Retrieved from <https://www.canada.ca/en/employment-social-development/programs/foreign-credential-recognition.html>

Statistics Canada. (2003). *Employment Dynamics in Canada*. Labour Force Survey. Statistics Canada.

- Statistics Canada. (2024). *Gig Work and Digital Platforms*. Statistics Canada. Retrieved from <https://www150.statcan.gc.ca/n1/daily-quotidien/240304/dq240304b-eng.htm> .
- Statistics Canada (2024, January 18). *Research to Insights: Working from home in Canada*. Statistics Canada. Retrieved from <https://www150.statcan.gc.ca/n1/en/pub/11-631-x/11-631-x2024001-eng.pdf?st=sdelgn2P>
- Susskind, D. (2022). *A world without work: Technology, Automation and How we Should Respond*. Metropolitan Books.
- Tapscott, D. & Tapscott, A. (2018). *The Blockchain Revolution - How the Technology Behind Bitcoin Is Changing Money, Business, and the World*. Penguin.
- Tiwari, R. (2023). The impact of AI and machine learning on job displacement and employment opportunities. *International Journal of Engineering Technologies and Management Research*, 7(1).
- Tompa, E., Mofidi, A., Jetha, A., Lahey, P., & Buettgen, A. (2022). Development and implementation of a framework for estimating the economic benefits of an accessible and inclusive society. *Equality, Diversity and Inclusion*, 41(3), 318–339. <https://doi.org/10.1108/EDI-07-2020-0186>
- True North. (2024). More Canadians than ever list gig work as a primary income source. *True North*. Retrieved from <https://tnc.news/2024/03/10/gig-work-primary-income/>
- Twenge, J. M., Campbell, W. K., & Carter, N. T. (2014). Declines in trust in others and confidence in institutions among American adults and late adolescents, 1972–2012. *Psychological Science*, 25(10), 1914–1923.
- United States Census (2022, May). *Educational Attainment in the United States, 2021*. United States Bureau of Statistics. Retrieved from <https://www.census.gov/data/tables/2021/demo/educational-attainment/cps-detailed-tables.html>
- University Affairs. (2024, July 10) Bill 18 positions Alberta government as the gatekeeper of federal research funding. *University Affairs*. Retrieved from <https://universityaffairs.ca/news/bill-18-positions-alberta-government-as-gatekeeper-of-federal-research-funding/>
- Van Esch, P., & Black, J. S. (2023). Artificial intelligence in talent acquisition: A review and research agenda. *International Journal of Human Resource Management*, 34(4), 711–740.
- Vance, J. D. (2021, December 15). *J.D. Vance: The universities are the enemy – National Conservatism Conference II* [Audio podcast episode]. The NatCon Squad. <https://natcontalk.podbean.com/e/jd-vance-the-universities-are-the-enemy-national-conservatism-conference-ii/>
- West, R. E., & Cheng, Z. (2023). Digital Credential Evolution: How Open Microcredentials/Badges Support Learning in Micro-, Meso-, and Macro-levels. In *Handbook of Open, Distance and Digital Education*. Singapore: Springer Nature Singapore.
- Wiernik, B. M., & Kostal, J. W. (2019). Protean and boundaryless career orientations: A critical review and meta-analysis. *Journal of Counseling Psychology*, 66(3), 280.
- World Economic Forum (2020). *Jobs of Tomorrow Mapping Opportunity in the New Economy*. World Economic Forum. Retrieved from http://www3.weforum.org/docs/WEF_Jobs_of_Tomorrow_2020.pdf
- World Economic Forum (2023). *Future of Jobs Report, 2023 – Insight Report*. World Economic Forum. Retrieved from https://www3.weforum.org/docs/WEF_Future_of_Jobs_2023.pdf
- World Economic Forum. (2025). *The Future of Jobs Report 2025*. World Economic Forum. Retrieved from <https://www.weforum.org>
- World Health Organization. (2020). *World Health Statistics 2020*. World Economic Forum.

Wyonch, R. (2020). *The Next Wave: Automation and Canada's Labour Market*. C.D. Howe Foundation. Retrieved from <https://fsc-ccf.ca/research/the-next-wave-automation-and-canadas-labour-market/#:~:text=By%202028%2C%20projections%20indicate%20that,about%2037%20percent%20by%202028>

Yang, J., & Liu, Y. (2019). Exploring the Antecedents of Adaptive Performance in the Workplace. *Journal of Business Research*, 97, 711-720.

Zhang, Y., Luo, L. & Wang, X. (2024). Aging with robots: A brief review on eldercare automation. *Interdisciplinary Nursing Research* 3(1): 49-56. <https://doi.org/10.1097/NR9.0000000000000052>

Zschirnt, E., & Ruedin, D. (2016). Ethnic discrimination in hiring decisions: a meta-analysis of correspondence tests 1990-2015. *Journal of Ethnic and Migration Studies*, 42(7), 1115-1134.

American National Standards Institute. (n.d.). <https://www.ansi.org/>

U.S. Census Bureau. (2023). *Educational attainment in the United States: 2023* (Current Population Survey Detailed Tables). U.S. Department of Commerce. <https://www.census.gov/data/tables/time-series/demo/educational-attainment/cps-detailed-tables.html>

National Center for Education Statistics. (2024). *Status and trends in the education of racial and ethnic groups*. U.S. Department of Education. <https://nces.ed.gov/programs/raceindicators/>

ACKNOWLEDGEMENTS

We thank all the researchers and community partners of the Productivity Project for their contribution to *Series 1: Productivity and People*. Their diverse knowledge, experience, and expertise were invaluable, enhancing the depth and insights of this project.

Name	Focus Area	Affiliation
Dr. David Finch	Workforce Development, Performance-based Management	Mount Royal University
Dr. Hussein Alzyoud	Productivity, Income Equality, and the Gender Wage Gap	Athabasca University
Dr. Michele Braun	Employee Engagement, Workforce Development, Equity and Diversity	Worklore Inc.
Dr. Irina Dovbischuk	Global Supply Chain Management, Business Ethics, Operations Management	Mount Royal University
Jeff Griffiths	Competency-Based Management	Canada West Foundation
Janet Lane	Competency-Based Workforce Development and Deployment	Canada West Foundation
Charissa Lee	Scholarship of Teaching & Learning, Human Resources	Southern Alberta Institute of Technology
Dr. Nadège Levallet	Information Systems, Strategy, Dynamic Capabilities	University of Maine
Dr. Sharon McIntyre	Inclusive Innovation, Co-Creation, Entrepreneurship Curriculum	New Cottage Industries
Dr. Stephen Murgatroyd	Innovation, Change, Organizational Transformation And AI. Anticipatory Studies	University of Alberta
Dr. Norm O'Reilly	Regional Economic Development and Talent	University of New England
Dr. Simon Raby	Business Growth and Leadership Transition	Mount Royal University
Dr. Bahman Radnejad	Innovation, Sustainability and Strategy	Mount Royal University
Dr. Chad Saunders	Entrepreneurial Career Transitions, Entrepreneurial Orientation in Jobs	University of Calgary
Dr. Anh Thu Nguyen	Consumer Behaviour, Eco-Friendly Packaging, Sustainability Education, And Experiential Learning	Mount Royal University
Dr. D'Andre Wilson	Career Pathways, Experiential Learning, Work Integrated Learning, Workforce Development	Calgary Economic Development
Dr. Yifei Wang	Work-integrated learning (WIL) curriculum and program design	Mount Royal University
Dr. Gini Weber	Marketing, consumer behaviour, service ecosystem	Mount Royal University

THE Productivity Project —



The Alberta Centre for Labour Market Research (ACLMR) is a premier resource for labour market expertise in Canada. It offers unbiased, high-quality information and research on labour markets to inform provincial, regional, and federal policies. The ACLMR is funded by Alberta's Ministry of Jobs, Economy, and Trade. Visit ACLMR.ca



MOUNT ROYAL
UNIVERSITY

**Institute for
Community Prosperity**

The Institute for Community Prosperity is a hub of social innovation, systems-learning and community engagement that bridges the knowledge, wisdom and experience of community with academic learning and scholarly insight. We bring together community, students and faculty from across disciplines, sectors and backgrounds to tackle the complex social and ecological challenges of our time. Visit MtRoyal.ca

**CANADAWEST
FOUNDATION**

The Canada West Foundation is the only public policy think tank that focuses on issues that matter to the West. We provide solutions in three areas: resources, environment, and economy; skills, innovation, and productivity; and trade and trade infrastructure. We advance policies that decision makers trust. Visit CWF.ca



LearningCITY

The LearningCITY Collective is an independent, member-founded, and funded organization committed to transforming Calgary into a city that never stops learning. The research and policy group conducts research to stimulate evidence-based policy debate on education, learning, and labour force development. Visit LearningCITY.ca