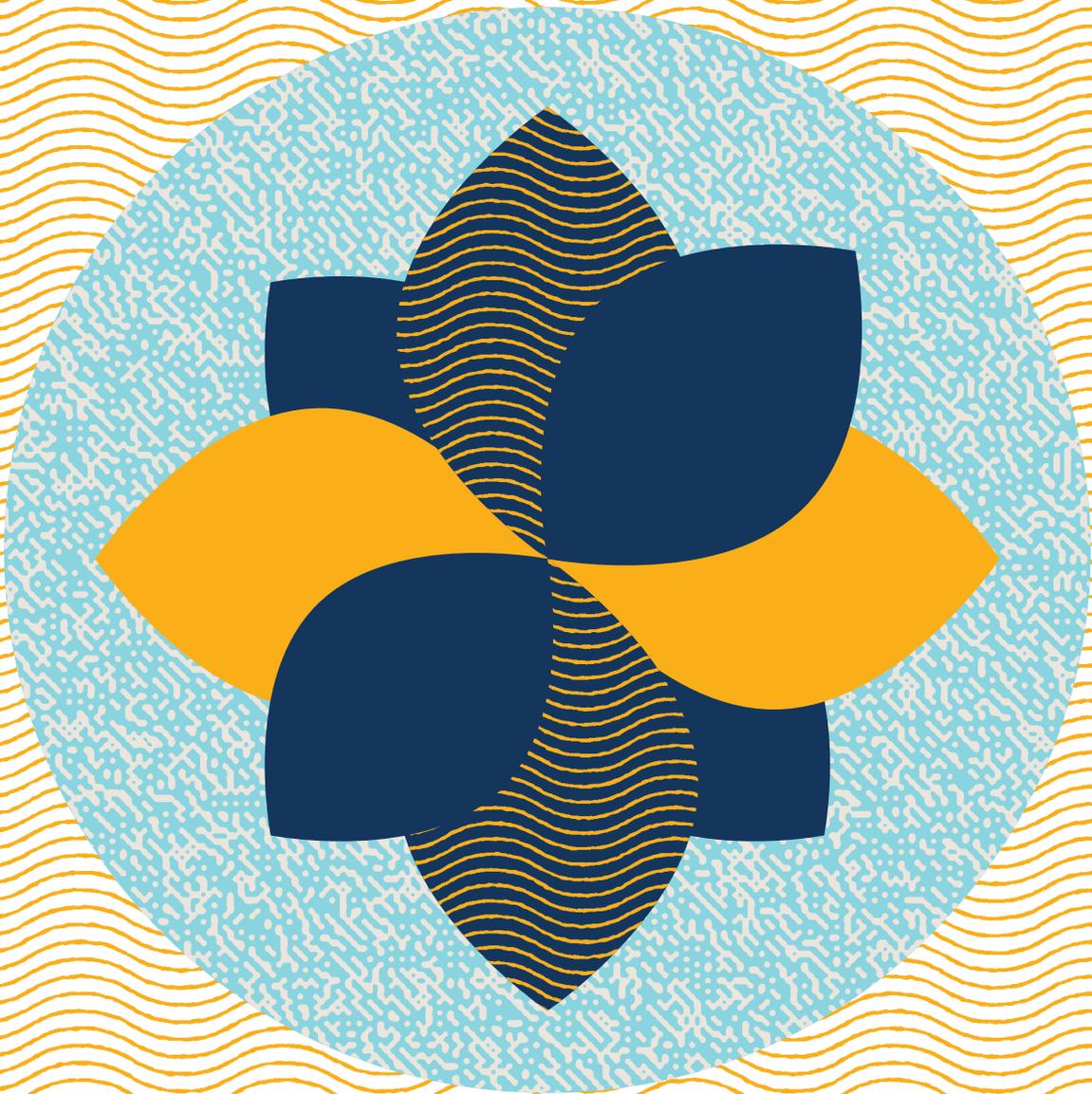


MAY 2021

Nova Scotia Inclusive Innovation Monitor

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The Brookfield Institute for Innovation + Entrepreneurship (BII+E) is an independent, non-partisan policy institute, housed at Ryerson University. We work to transform bold ideas into real-world solutions designed to help Canada navigate the complex forces and astounding possibilities of the innovation economy. We envision a future that is prosperous, resilient and equitable.

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ONSIDE (Organization for Nova Scotia Innovation-Driven Entrepreneurship) is a not-for-profit organization that amplifies the power of inclusive innovation-driven entrepreneurship and disruptive ideas. We mobilize collaboration to turn ideas into impact for a more prosperous and entrepreneurial future in Nova Scotia.

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Forward

WHAT DOES NOVA SCOTIA'S economic future look like?

To arrive at the answer to this question, we must first reflect on today. Who is participating in, contributing to, benefitting from, and making decisions about our societies and how we generate wealth? Where has inclusion happened, and where have we fallen short?

Over the past 10 years we have experienced two major recessions, the concentration of wealth in the hands of fewer people, changes in the skills needed to find a job, and the acceleration of populism. Within the last year the rise of social movements such as Black Lives Matter, #MeToo, and a global pandemic have highlighted both the

fragility and strengths of our society. It is clear that not everyone has benefited from previous innovation and economic agendas.

As an organization dedicated to fostering a prosperous Nova Scotia through inclusive innovation-driven entrepreneurship, we commissioned this examination of Nova Scotia's innovation economy to shed light on what we are doing well and where we need to do better.

Information is the first step toward a better, more inclusive, future.

Alexandra McCann
Executive Director, ONSIDE

Highlights



The Nova Scotia Inclusive Innovation Monitor draws on the national *Inclusive Innovation Monitor*—a joint project by the Brookfield Institute for Innovation + Entrepreneurship (BII+E) and the Innovation Policy Lab (IPL)—to track the performance of Nova Scotia on more than 30 indicators of innovation, equity, and inclusion and compare these against national and international peers. It highlights relationships between these variables to help inform policies aimed at building a more resilient, innovative, and inclusive economy.



With a highly educated population, substantial spending on research from its higher education institutions, a strong and growing start-up ecosystem, and a robust venture capital environment, Nova Scotia's innovation economy has important strengths.



Gaps remain, however. Nova Scotian businesses spend significantly less on research and development than their national or international counterparts and individuals in the province report less entrepreneurial activity. Nova Scotia also has lower economic

output and wages than other provinces and poverty rates are among the highest in the country.



Troubling inequalities also persist. Nova Scotia fares better than the rest of Canada in terms of labour market participation for some groups, but many people in the province continue to experience severe inequalities—for example, when it comes to access to economic opportunities for Black and Indigenous people, and rural access to broadband internet. Also concerning is that while Nova Scotia has lower pay inequalities along racial lines than the rest of the country in general, they are very high in tech occupations specifically.



Nova Scotia has a strong base from which to build a thriving and inclusive innovation economy, but struggles, like the rest of Canada, with certain innovation activities, and is weaker than other parts of Canada in economic prosperity measures. Also like the rest of Canada, Nova Scotia struggles with inequalities along lines of race, sex, disability, and geography.

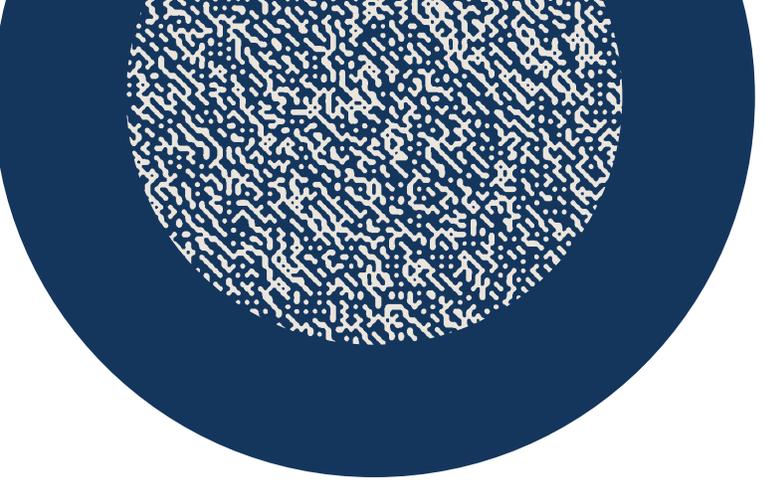
Introduction

NOVA SCOTIA IS CLEARLY a desirable place to live, with more people deciding to make it their home every year. But as many have pointed out, keeping the momentum going will require a strong economic strategy that focuses on innovation—and on inclusion.

Until recently, questions of fairness and the distribution of opportunities and benefits have rarely been discussed in innovation research and policy. Evidence increasingly suggests, however, that questions of distribution of opportunity are essential not only to an equitable distribution of opportunity and gains from the innovation economy, but to that economy's success. As a way to initiate this conversation in Canada, the Brookfield Institute for Innovation + Entrepreneurship (BII+E), in partnership with the Innovation Policy Lab (IPL) at the University of Toronto's Munk School of Global Affairs and Public Policy, recently launched the Inclusive Innovation Monitor (IIM), a framework and interactive website that tracks the performance of more than 30 indicators of innovation, equity, and inclusion. This report uses that framework to zero in on Nova Scotia, comparing the province's inclusive innovation performance to Atlantic Canada, the nation, and Canada's international peers.

We define innovation as the development, diffusion, or implementation of new or improved products, services, and processes that generate economic or social value for individuals, firms, communities, and/or economies.ⁱ It is important to note that an innovation need not be new to the world, just new to those adopting the innovation.

ⁱ This definition draws on OECD, *Oslo Manual: Guidelines for Collecting, Reporting and Using Data on Innovation*, 4th ed. (Geneva: OECD, 2018), <https://www.oecd.org/science/oslo-manual-2018-9789264304604-en.htm>; and Conference Board of Canada, "How Canada Performs: Innovation," last modified May 2018, <http://www.conferenceboard.ca/hcp/provincial/innovation.aspx>.



An innovation economy is *inclusive* when there are:

opportunities for all people to *participate* as workers (in good jobs with decent wages and security), entrepreneurs (if they choose), and consumers (with sufficient resources to lead good lives);

fair distributions of the benefits and harm produced by innovation—including more attention to and management of where and to whom the economic and social gains of innovation and growth flow, and who bears the burden of market failures and negative externalities; and

opportunities for people to *participate* in decision-making about the priorities, direction, and regulation of innovation.^{ii,1,2}

ⁱⁱ This three-pronged conception of inclusive innovation draws from the definition offered in Stanley, Glennie, and Gabriel, *How Inclusive Is Innovation Policy? We recognize that there is disagreement about how to define some of the normative terms used here—including “good,” “decent,” and “fair”—and that some of that disagreement is “reasonable.” Recognizing that not providing full definitions of those terms leaves some ambiguity in the idea of “inclusive innovation” more generally, we believe that developing more robust definitions of the normative terms is a job for democratic deliberation. At the same time, we follow the late Anthony Atkinson in holding that we “may well disagree as to how much inequality is acceptable while agreeing that the present level is intolerable or unsustainable.” For practical purposes, if we can agree on the “direction of movement” in addressing inclusion and inequality challenges, we can set aside disagreement about “the ultimate destination” for the time being. Atkinson, *Inequality*.*



A Note on Problematic Data Categories

For many of our indicators, we have relied on Census and other data collected and reported by Statistics Canada that risks obscuring some of the realities and experiences of racialized minorities and LGBTQ+ and other identities. Where possible, we have tried to unpack the categories used by Statistics Canada to provide as clear a picture as possible, but there are three cases in which we face challenges:

Visible and non-visible minorities

Statistics Canada often uses the terms “visible minority” and “non-visible minority” when it reports data on what we refer to as racialized minorities. There are a few concerns with this term. In the first place, “visible minorities”—and its mirror category, “not a visible minority”—hides some identities that some respondents experience. For example, the counterfactual category “not a visible minority” includes not only “White” or “Caucasian” people, but also Indigenous peoples and those who identify as White and another identity, such as Latin American, Arab, or West Asian.

The experiences of people with these identities are substantially different and should not be aggregated together. As the United Nations has noted, the “lack of precision” with the categories “visible” and “non-visible” minorities “may pose a barrier to effectively addressing the socio-economic gaps of different ethnic groups.” Statistics Canada has said that they are planning

on changing the term, and will improve how they collect racial data. We are starting to see this with recent changes in the Labour Force Survey.

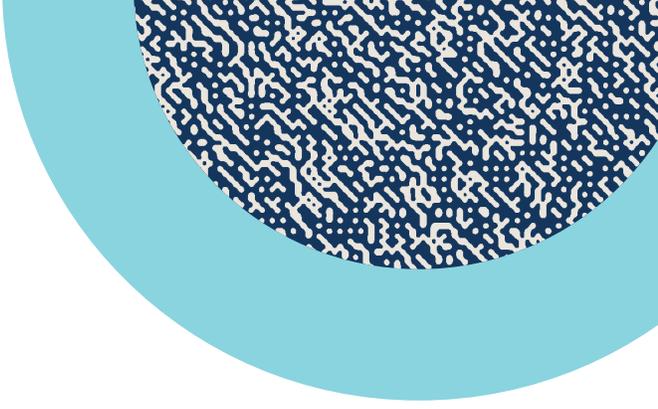
Gender and sex

Statistics Canada has recently updated their gender and sex variables. “Sex” now refers to “sex assigned at birth,” which is typically “based on a person’s reproductive system and other physical characteristics.” “Gender” refers to “the gender that a person internally feels” (i.e., “gender identity” along the gender spectrum) and/or “the gender a person publicly expresses” (i.e., “gender expression”).

We believe this is an important step forward. However, because we rely on older data to understand trends in certain indicators, we have little choice but to use the older, less precise and less inclusive, categories “female/male” and “woman/man.”

The Census and Indigenous peoples

The Census picture of Indigenous peoples is limited, due to gaps and challenges in data collection and reporting. While Indigenous peoples are increasingly participating in the collection of Census responses, the 2016 Census did not completely enumerate 14 reserves and settlements. This was partly due to disruption due to natural disasters, but also reflects ongoing concerns about the misuse of data collected from and about Indigenous peoples. As a result, data on Indigenous peoples in each of the indicators should be treated with caution.



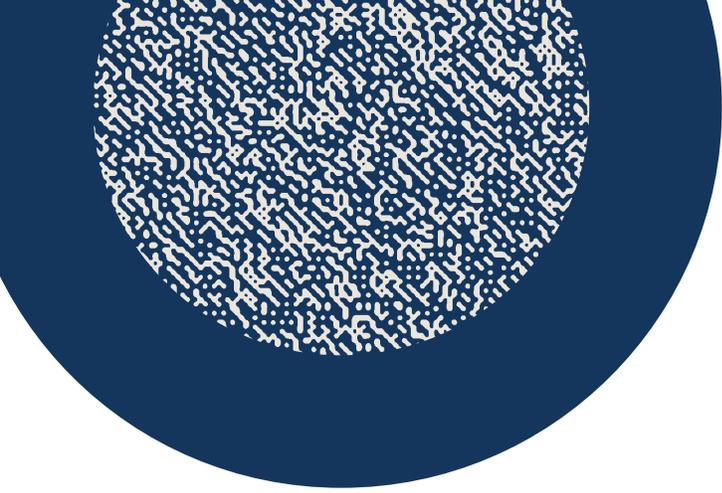
In order to begin evaluating the performance of inclusive innovation, we compile data into three pillars: Opportunities, Activities, and Outcomes. Together, they capture the idea that *opportunities* and *resources* to innovate and participate (e.g., education and skills, financial resources, and research capacity) shape businesses' and individuals' innovation *activities* (e.g., R&D, product development, technology adoption, and entrepreneurship), which in turn shape *outcomes* for businesses (e.g., productivity, revenue, and growth) and individuals and communities (e.g., employment, income, wealth, and well-being). Unfortunately, there are gaps in the data that limit our ability to create a complete picture. For example, Statistics Canada does not provide within-province data on wealth distribution or income mobility. For a description of these data gaps and our recommendations, please see <https://www.inclusiveinnovation.ca>.

From “Creating Our Future” to “New and Better Ways”

Nova Scotia has historically struggled with the challenges of an ageing and shrinking population, an urban–rural economic divide, and slow growth and low productivity. Provincial experts over the years have made numerous calls to turn the economy around, working with historic and emerging strengths including a highly educated population, new emerging industries, and strong research institutions. This report builds on a number of those efforts, many of which have focused on bolstering innovation and entrepreneurship and fostering economic inclusion. Most notably, the 2014 Report of the Nova Scotia Commission on Building Our Economy, *Now or Never: An Urgent Call to Action for Nova Scotians*, sounded the alarm that Nova Scotia “was on the brink of an extended period of decline.” It noted that “while virtually everyone sees the need for population growth and greater wealth generation, most of the practical strategies to achieve these outcomes are controversial,” with divisions between “rural and urban perspectives, and a lack of public confidence in private sector

leadership of the economy.”³ Echoing many of the recommendations from *Creating Our Own Future—A Nova Scotia Economic Strategy*,⁴ published 25 years earlier, *Now or Never* (also known as the “Ivany Report” for Commission Chair Dr. Ray Ivany) heralded Nova Scotia’s assets, opportunities, institutional capacities, and human capital and called for a provincially led collective vision for the future. The report recommended a set of measurable 10-year goals for growth and renewal, tracked by *OneNS*,⁵ including demographic and community stability, business and trade expansion, research and development, revitalization of traditional rural industries, improved governance and fiscal strengths, and the implementation of “game-changer strategies for transformation and renewal.”

In response to the Ivany Report, the Government of Nova Scotia formed the One Nova Scotia Coalition, composed of cross-sector and cross-province leaders, to develop an action plan to achieve the Ivany Commission’s goals. The Coalition’s Collaborative Action Plan, *We Choose Now*, sought to provide a playbook for Nova Scotia, supporting early years education and well-being, expanded immigration with a focus on entrepreneurs, and leveraging Nova Scotia’s “ocean advantage.”⁶ In parallel, the Nova Scotia Department of Labour and Advanced Education formed a Research, Development, and Commercialization Working Group, in partnership with universities and the Nova Scotia Community College, aiming to maximize the contribution of the province’s post-secondary education system to achieving the Ivany Commission’s goals. It established working groups on research, development, and commercialization; student recruitment and retention; technology-enabled



learning; entrepreneurship; and experiential learning. The working group's report, *New and Better Ways: A Field Guide for Nova Scotia's Innovation Ecosystem*, put forward the following thesis: "(i) that the future prosperity of Nova Scotia depends on creating a more productive and competitive economy, (ii) that this must be inclusive and sustainable growth that benefits all regions, and (iii) that this objective can only be accomplished by embracing and supporting innovation."⁷ It set out concrete recommendations on talent development, innovative exports, the ocean cluster, the start-up ecosystem, and research excellence. The commitment to inclusive and sustainable economic growth was recently echoed in the March 24, 2021 mandate letter to the Honourable Labi Kousoulis, Minister of Finance and Treasury Board, Minister of Inclusive Economic Growth, and Minister of Trade, which states that "an economy is good if, and only if, it permits and fosters well-being. An economy that is focused only on higher profits for fewer people, that concentrates wealth among a very small group while excluding many others, and that disregards the impact economic activity has on the environmental sustainability of the planet is not a good economy."⁸

Recently, the Organization for Nova Scotia Innovation-Driven Entrepreneurship (*ONSIDE*), in collaboration with MIT REAP and local partners, such as the One Nova Scotia Collective, launched *Focus Nova Scotia* to support acceleration strategies for economic growth across the province. The first MIT Regional Entrepreneurship Acceleration Program (REAP) Nova Scotia report, *Looking Back, Looking Forward*, explored the

province's challenges and regional competitive advantages.⁹ The report highlighted Nova Scotia's "strong, accessible post-secondary education system" of community colleges and ten universities, established ocean-based economy, emerging culture of innovation, and strong legacy companies, success stories, and entrepreneurial heroes. It captured familiar challenges, such as low GDP growth and high unemployment in rural areas and a lack of mentorship, angel investors, VCs, and start-ups achieving scale, and underlined the need to grow Nova Scotia's innovation-driven entrepreneurial ecosystem.

A number of other efforts and organizations seeking to bolster and improve Nova Scotian entrepreneurship and innovation are in operation, including the *Nova Scotia Innovation Hub* for the bioeconomy; *Innovacorp*, an early-stage venture capital organization; *Nova Scotia Business Inc.*, the provincial economic development agency; and accelerators and innovation hubs such as *Volta* and *Ignite Labs*.ⁱ

Writing in the *Chronicle Herald* in March 2021, a year into the pandemic, Jeff Larson and Peter Nicholson, authors of *New and Better Ways: A Field Guide for Nova Scotia's Innovation Ecosystem*, make the case that Nova Scotia is well-positioned "to be in the vanguard of the global and national movement to build back better."¹⁰ Larson and Nicholson recommend a six-pronged approach:

1. **DEVELOP AND ACQUIRE TALENT:** including extending early childhood learning to age three, eliminating or reducing community college tuition for residents, increasing the Nova Scotian share of provincial nominee immigrants, and recruiting individuals with demonstrated entrepreneurial talent.
2. **EMBRACE THE DIGITAL TRANSFORMATION:** including universal broadband, free Chromebooks for students, digital training for teachers, doubling the enrolment capacity of computer science

ⁱ See <https://novascotiainnovationhub.com/>; <https://innovacorp.ca/>; <https://www.novascotiabusiness.com/>; <https://voltaeffect.com/>; <https://igniteatlantic.com/>.

and certificate programs, and intensifying sector-specific digital skills training, designed collaboratively by business and post-secondary institutions.

3. **“LEAD IN DIGITAL AND VIRTUAL HEALTH CARE:** including adopting electronic health records, digital health applications for rural areas and elder care, and a federal-provincial Digital Health Innovation fund to support pilots and procurement from Nova Scotian innovators.
4. **TAKE CLIMATE CHANGE SERIOUSLY—AND PROFIT FROM IT:** focusing on opportunities in electricity generation, transportation, and buildings (areas where GHG emission contributions are high), building an Atlantic Loop (a clean electrification transmission infrastructure project), investing in battery and grid storage R&D, preparing for widespread use of electric vehicles, and supporting residential and commercial transitions away from oil heating.
5. **PROMOTE LOCALHOOD:** a multi-year strategy to develop Nova Scotia’s lifestyle assets to attract both tourists and remote workers, including highways, bike and hiking trails, community and activity transit, innovative affordable housing programs, and a Localhood Community Development Fund to support community improvements, services, and attractions.
6. **CATALYZE INNOVATION:** including more effectively targeting foreign direct investments towards “innovation vouchers” redeemable at Nova Scotian companies and institutions, supporting incubators and accelerators, and building on the Ocean Superclusters model to create smaller, focused clusters in high-potential areas such as Agrifood, Cleantech, and Healthtech.

What these reports, recommendations, and efforts have in common is a commitment to a thriving, resilient, innovative Nova Scotia that builds on the province’s strengths and fosters well-being for all. Furthering that discussion, the *Nova Scotia Inclusive Innovation Monitor* brings together metrics of both inclusion and innovation

in order to paint a picture of inclusive innovation in the province, with the aim of helping to inform the work of Nova Scotia’s public, private, and nonprofit sector leaders as they seek to advance these efforts and realize this commitment.

Pillar I: Opportunities



The Opportunity pillar focuses on indicators that tell us the extent to which the Nova Scotian innovation ecosystem has the *resources and inputs* to support innovation, and the *distribution* of these resources and inputs among people and regions. It includes metrics on educational attainment, financing (e.g., VC investments and interest rates), and research.”

The presence of a highly educated population, foundational research, funding for new ventures, and access to the infrastructure necessary for engaging with the wider world are what a successful innovation economy is built on. Moreover, the distribution of who has access to those resources shapes how people can participate in and benefit from that economy. With high post-secondary education attainment rates, substantial spending on research by higher education institutions, and competitive venture capital funding, Nova Scotia has much of that foundation. Troubling inequalities persist, however, in who has access to that education and who has access to the infrastructure of broadband internet.

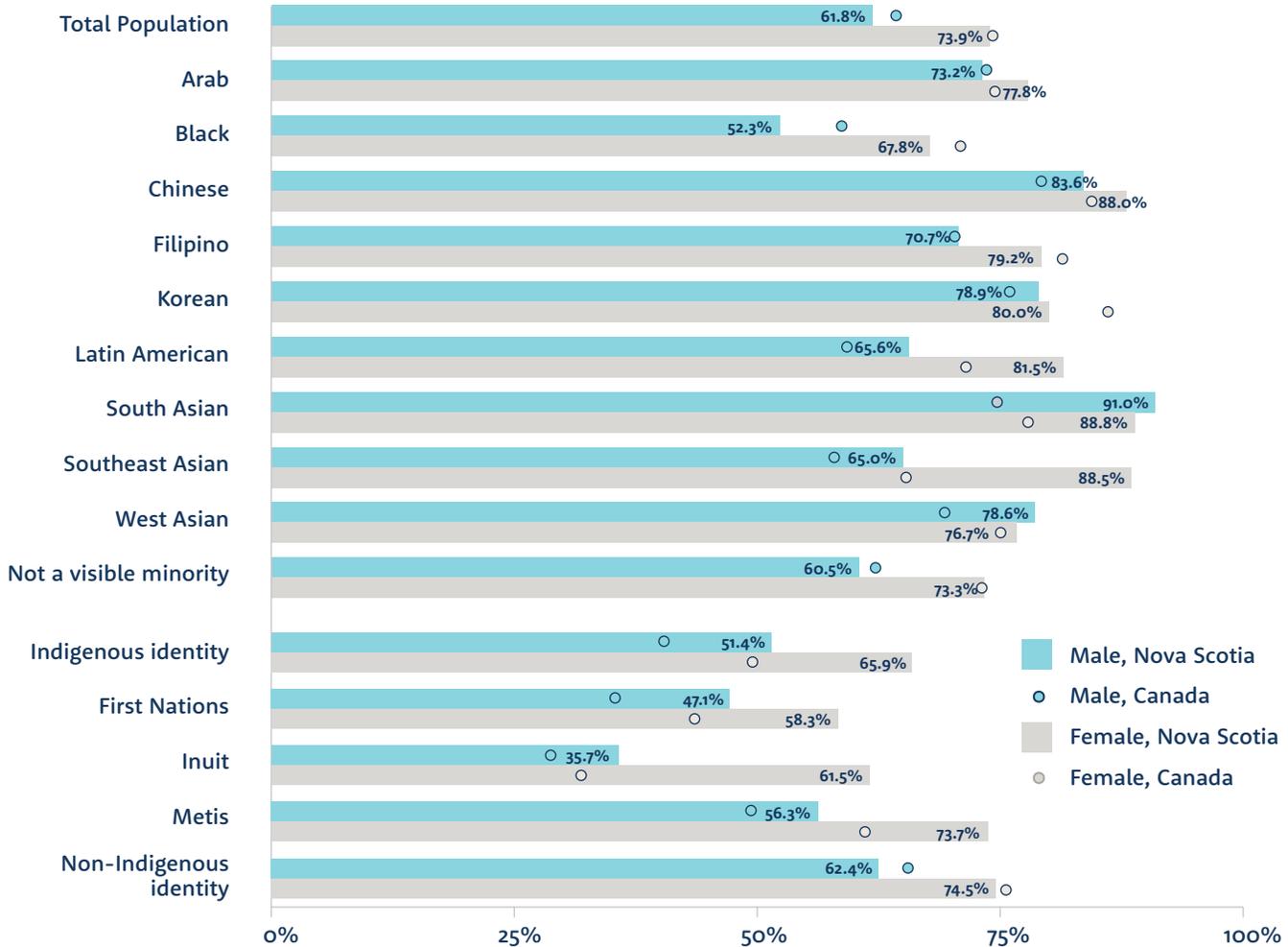
Education

Technical and general knowledge and skills are required to develop and adopt innovation. Post-secondary education (PSE) and other forms of learning and training are therefore important inputs for an innovation ecosystem. Canada has a highly educated population, and Nova Scotia is among the leading provinces in this respect, ranking first among Atlantic provinces and fourth overall: 64.3 percent of those aged 20 to 64 in

Figure 1: Post-secondary education attainment in Nova Scotia versus Canada

Percentage of people aged 25 to 34 with a tertiary credential by racial identity and sex, 2016

*Those who identify as Japanese are omitted due to small sample size (30 individuals aged 25 to 34)
 **The term racial identity here refers to Statistics Canada terms visible minority or Indigenous identity



Source: Statistics Canada 2016 census tables 98-400-X2016275 & 98-400-X2016178

Nova Scotia have PSE attainment, compared to the national rate of 64.8 percent. According to OECD data, Canada's strength in this regard largely derives from world-leading college attainment at 26.2 percent, 4.8 percentage points higher than the next ranked country, Japan. Canada is, however, a middling performer in terms of university attainment. According to Statistics Canada, Nova Scotia has a similar breakdown of attainment type as the rest of the country, with 25.9 percent of its population aged 25 to 64 having

a college diploma, 10.6 having a trades certificate or diploma, and 27.8 percent having a university degree.¹²

However, not all demographic groups have high rates of PSE. Access to education, graduation rates, and the burden of student debt remain unequal.¹³ In Nova Scotia, all visible minority groups (aged 25 to 34) have a higher PSE attainment rate than those not in a visible minority, with the exception of Black men, who have a PSE attainment rate

of 52.3 percent, 9.5 percentage points lower than the overall rate for all men. Nationally, Black men have a PSE attainment rate of 58.6 percent, 5.7 percentage points lower than the overall rate for men. Among those aged 25 to 34, Inuit (55.5 percent), Métis (67.2 percent), and First Nations (53.2 percent) in Nova Scotia are less likely to hold a PSE credential than non-Indigenous people (68.6 percent), but the attainment gap between Indigenous and non-Indigenous people is much narrower in Nova Scotia than in the rest of Canada. In Canada, Inuit, Métis and First Nations are less likely to hold a PSE credential than non-Indigenous people by 38.9, 13.7, and 29.6 percentage points respectively. Two groups that do particularly well in Nova Scotia are South Asian and Southeast Asian people. In Canada, South Asians have a higher attainment rate than those not in a visible minority by 7.0 percentage points, but in Nova Scotia this difference is a whopping 21.7 percentage points. Similarly, Southeast Asians have a lower attainment rate by 7.3 percentage

points nationally, but in Nova Scotia they have a higher rate by 12.4 percentage points.¹⁴

Research

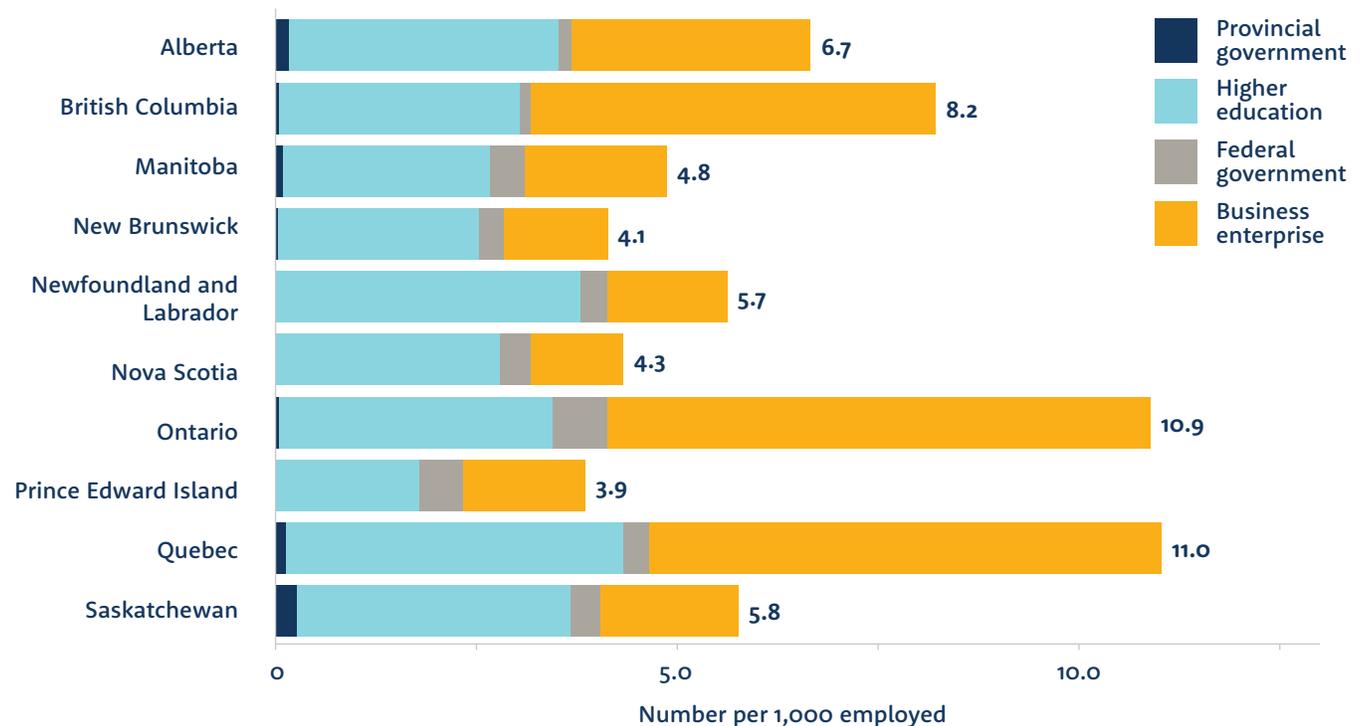
Research produced by higher education or government institutions is another critical input for innovation, generating ideas that—with appropriate support, funding, and partnerships—can be implemented or commercialized by firms.

According to Statistics Canada, Nova Scotia had 4.3 researchersⁱ per 1,000 employed in 2013 (the latest data available for provincial comparison), compared to 9.1 nationally.¹⁵ In 2018, the OECD reported a Canadian rate of 8.4 researchers per 1,000 employed, slightly lower than the OECD average of 8.6, but well behind global leaders such as Denmark (15.7), Korea (15.3), and Sweden (14.8).¹⁶ At 64.6 percent, the majority of researchers among Nova Scotia employees are in the higher education sector. Although faculty are not

ⁱ Not including technicians and support staff.

Figure 2: Number of researchers

Engaged in R&D per 1,000 employed by province and performing sector



Source: Statistics Canada table 27-10-0273-01



necessarily the same as researchers, a more recent indication of Nova Scotia's strength in higher education personnel is that in 2018/19 Nova Scotia had the second-highest number of faculty per 1,000 employed in the country, at 4.6.

Despite its lower number of researchers, Nova Scotia's high public spending on research relative to overall GDP is notable. At 0.99 percent, Nova Scotia not only has the highest level of higher education research and development (HERD) as a percentage of GDP in Canada, but also has a higher level than all OECD countries. This, coupled with the high number of faculty as a percent of all people employed, indicates the large role the higher education sector plays in Nova Scotia's economy. The majority of this expenditure (72.7 percent) comes from the higher education sector itself and from federal investment, while the

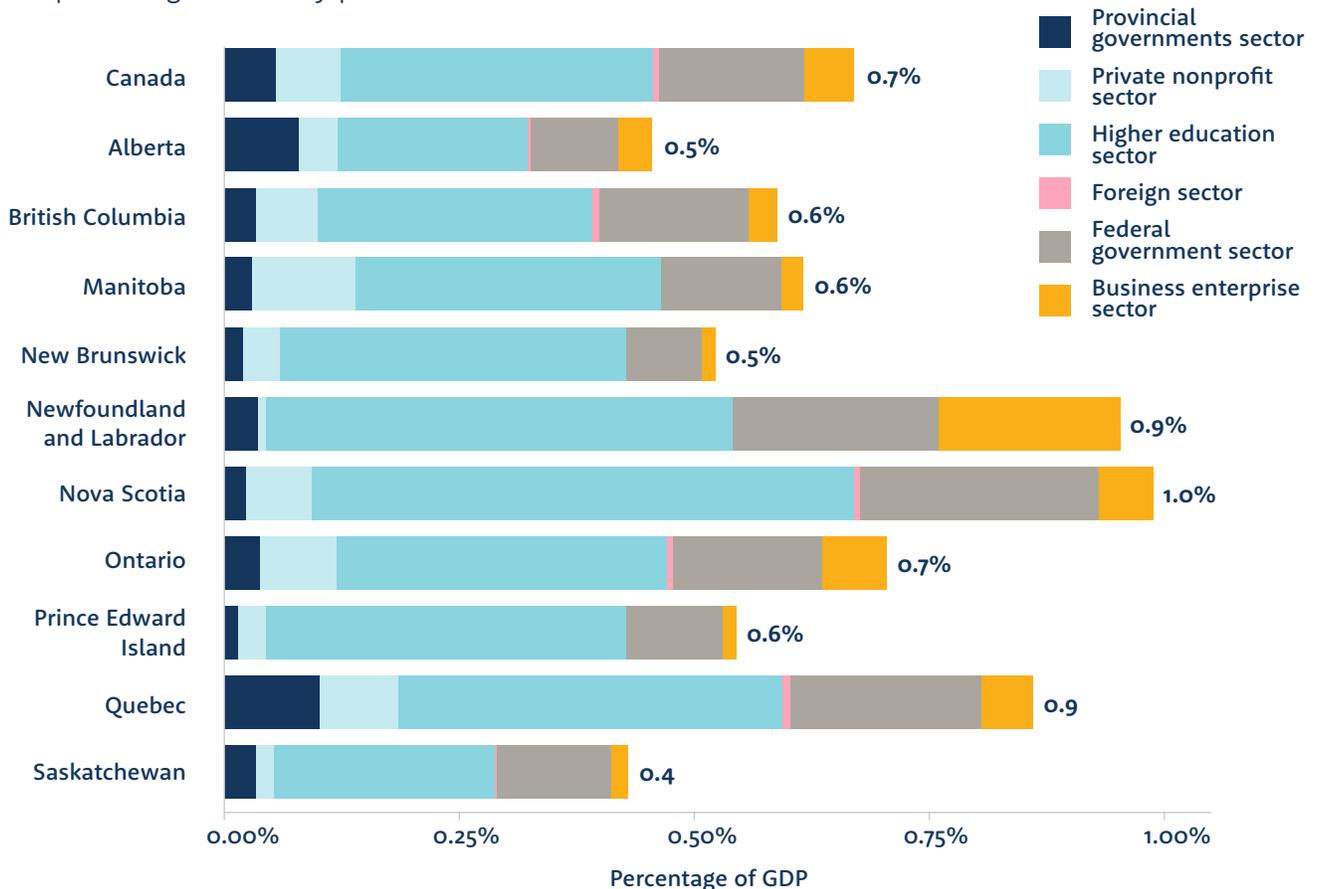
rest comes from the provincial government and private sector investment. Of the expenditure, 76.2 percent goes to natural science and engineering, and the rest goes to social sciences, humanities, and the arts. Dalhousie University accounts for 73 percent of HERD spending in Nova Scotia, with St. Francis Xavier University coming next, accounting for 7 percent. Nova Scotia also has a high level of government expenditure on research and development (GOVERD), at 0.17 percent of GDP, compared to a national rate of 0.11 percent and coming in second only to PEI at 0.25 percent.¹⁷ The Atlantic Startup Community highlights an emphasis on research as one of Nova Scotia's strengths.¹⁸

Finance

At 0.18 percent in 2018, Canadian firms attracted proportionally more venture capital as a

Figure 3: Higher Education R&D (HERD)

As a percentage of GDP by province and funder



Source: Statistics Canada table 27-10-0273-01



percentage of GDP than all OECD countries except Israel (0.38 percent) and the United States (0.55 percent).¹⁹ Among provinces and territories, Nova Scotia sits comfortably in the second tier with Ontario and BC at 0.16 percent of GDP, but behind front-runner Quebec at 0.27 percent when calculated as a three-year average from 2016 to 2018.²⁰ In 2019, Nova Scotia did not slow down, raising \$83.6 million or 0.18 percent of GDP.²¹ Although 60 percent of Nova Scotian start-ups are in IT, that sector was not a large driver of the funds raised, with the real star being the life sciences. A little less than half of the funds raised in 2019 (\$40 million) were raised by ABK Biomedical, a medical device company.

It is worth noting that Atlantic Canada overall performed exceptionally well in terms of raising venture capital in 2019. Verafin, a fraud detection technology company in St. John's, Newfoundland and Labrador, raised a Canadian record breaker of

\$515 million, bringing the Atlantic total to \$651.3 million or 0.51% of GDP.²²

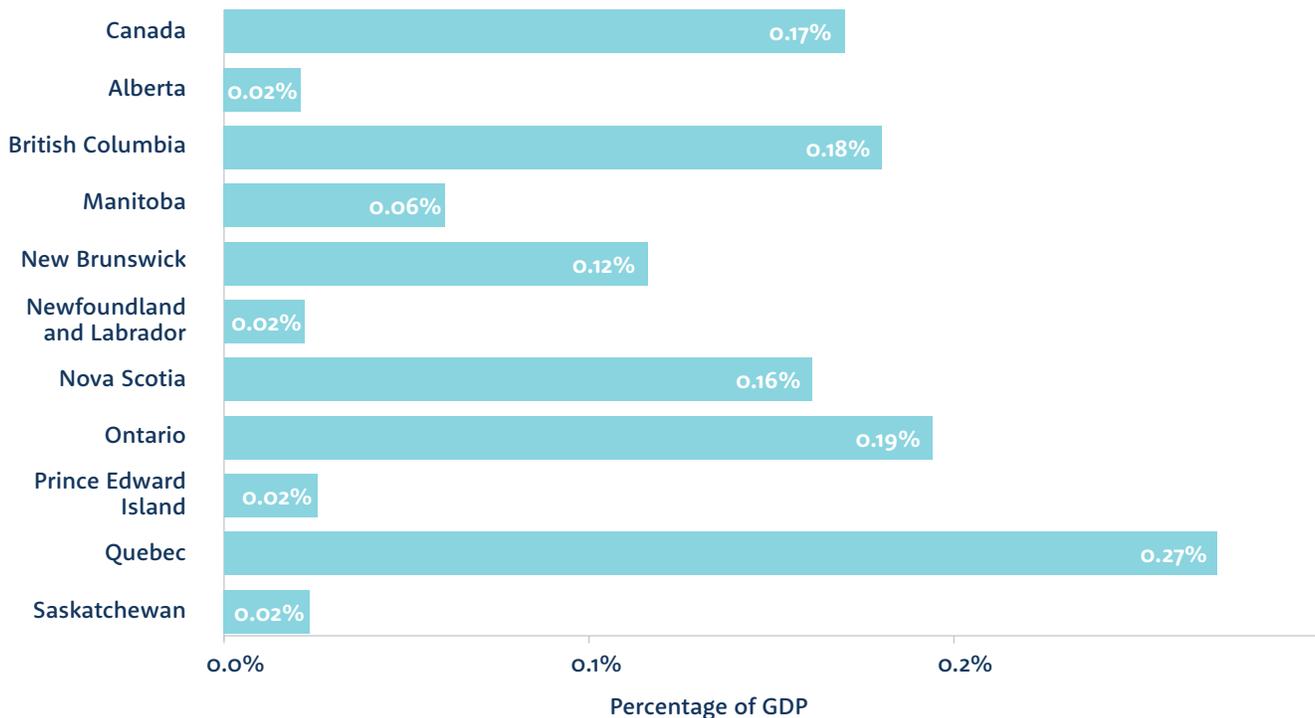
Unfortunately, and unsurprisingly, the distribution of this success has not been equitable between genders in Atlantic Canada, although there has been some progress. In 2019, 14 percent of start-ups in Atlantic Canada had woman CEOs, and those companies raised a total of \$16.5 million. If Verafin's \$515 million is removed, this still only accounts for 12.5 percent of the total money raised in the region. While these numbers are low, they are an improvement from 2014, when 8 percent of companies were headed by women and they raised 7.5 percent of total venture capital in the province. Most of these companies are fairly new, with 63 percent of them being founded in 2016 or later.²³

Internet Access

Internet access is a core service needed to perform everything from banking, working, and learning to

Figure 4: Venture capital investment

As a percentage of GDP; three-year average, 2016 to 2018, by province

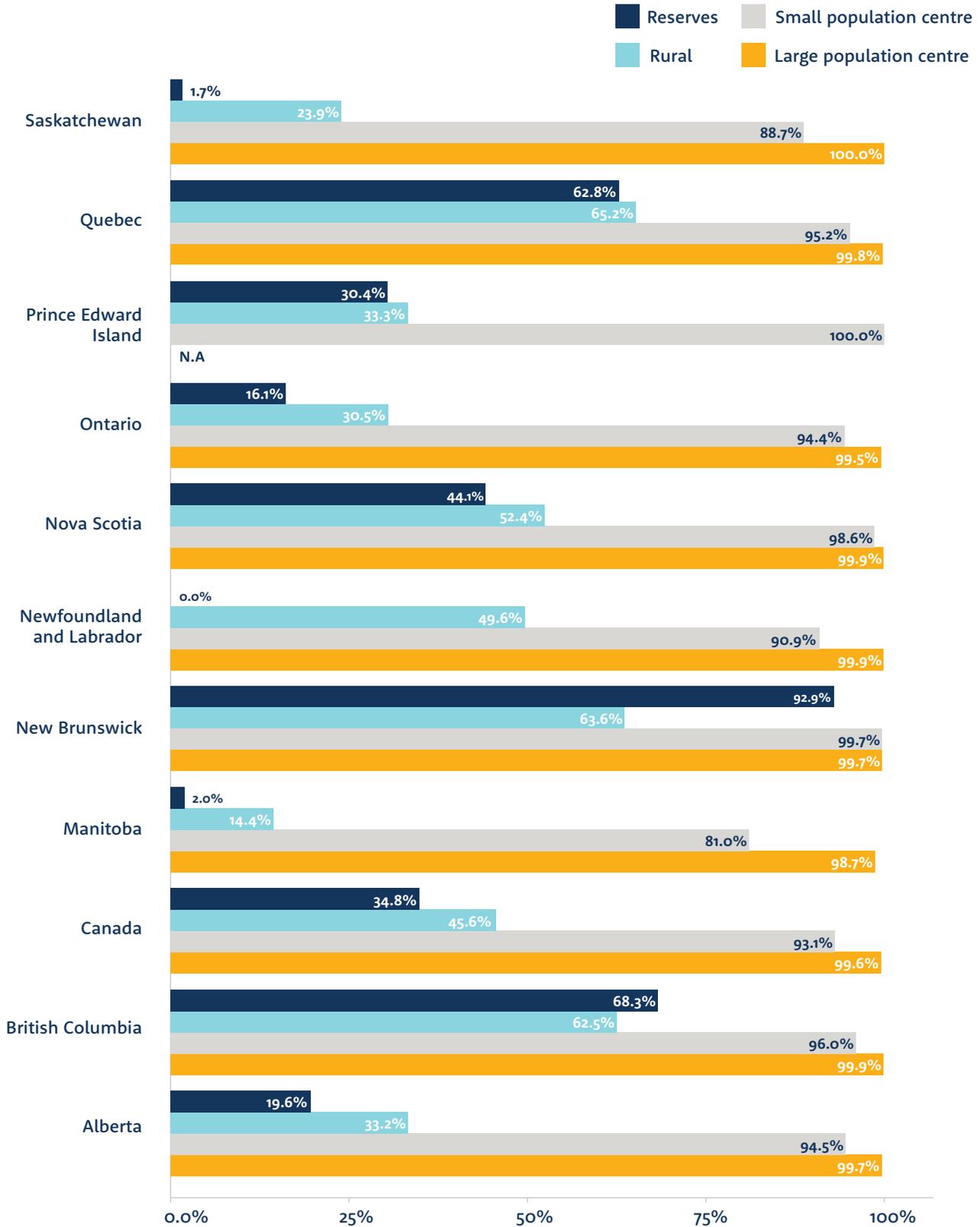


Source: CVCA, Venture capital canadian market overview, 2019



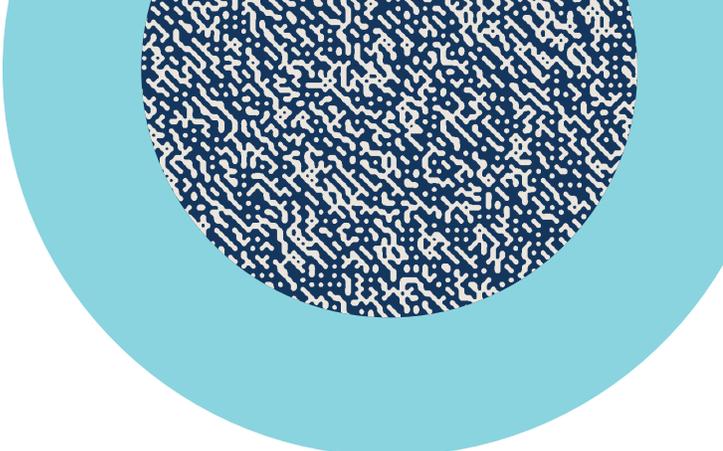
Figure 5: Availability of Internet services

With speeds of 50/10Mbps and unlimited data, by population size and province/territory (percent of households), 2019



Source: The Canadian Radio-television and Telecommunications Commission





receiving health care and accessing government services and information. In the context of the COVID-19 pandemic, internet access—and the devices needed to use it—has become even more imperative. To various extents, communities across the country have had to move aspects of work, consumption, learning, and life online to reduce in-person interactions and exposures. The United Nations has declared internet access a human right,²⁴ and the Canadian Radio-Television and Telecommunications Commission (CRTC) declared the internet a basic service in 2016.²⁵ Canada’s digital divide is in large part an urban–rural divide, with significant disparities in access to broadband internet. Other groups disadvantaged by limited access to home internet include people in lower income brackets, Indigenous peoples, and older adults.²⁶

According to the CRTC, rural access to broadband in Canada is quite concerning. In 2019, only 45.6 percent of rural homes had access to internet services with speeds over 50 mbps and unlimited data, compared to 99.6 percent in large population centres and 93.1 percent in small population centres. Nova Scotia does slightly better at 52.4 percent of rural households, coming in fourth among the provinces. New Brunswick and Quebec have the highest rural coverage, at 63.6 percent and 65.2 percent respectively. Nova Scotia similarly comes in fourth in terms of broadband access on reservations, at 44.1 percent compared to a national rate of 34.8 percent.²⁷ For a much more detailed description of rural access to internet services we point to the interactive map developed by Innovation and Social development Canada (ISED) in partnership with the CRTC.²⁸ While these numbers are concerning, as of January 2021 Develop NS has announced plans to build internet infrastructure to 87,000 homes and businesses in rural Nova Scotia.²⁹

What Does this Mean for Nova Scotia?

Nova Scotia has strong inputs and conditions for innovation, with particular strengths in higher education and government research and venture capital investment. Spending on higher education R&D as a percentage of GDP not

only surpasses the rest of Canada, but all OECD countries as well; however, Nova Scotia has a lower number of researchers per capita than the rest of Canada. Venture capital investment is also quite impressive, performing in a similar tier as Ontario and British Columbia from 2016 to 2018, but only a small percent is going to companies headed by women. Additionally, while rural broadband access is better in Nova Scotia than nationally, it is still quite poor. Nova Scotia could therefore consider building its research strengths, including in industrial areas such as ocean technology (as recommended by the Atlantic Startup Community)³⁰ and life sciences, addressing inequities in education and access to finance, and expanding access to rural broadband. Progress in these areas would help to foster innovation that both drives growth and contributes to greater economic inclusion.

Pillar II: Activity



The Activity pillar provides a picture of the innovation-related activities pursued by firms. It also shows who is participating in the economy generally, and in innovation specifically. It includes metrics on innovation development (e.g., business R&D and patents), technology adoption, entrepreneurship, and the labour force.³¹

The activity pillar describes the *doing* of innovation by firms, and who gets to be included

in that effort. Nova Scotian firms spend much less on research and development than their national or international counterparts, and Nova Scotian individuals report less entrepreneurial activity than the rest of the country. There are, however, some positive indications as well, with a strong start-up network and Atlantic firms reporting a high percentage of sales from novel products or services. Unfortunately, there are also indications that not everyone has a seat at the table, with a particular lack of women in leadership roles in the start-up ecosystem and participation inequalities for Black people and West Asian women.

Entrepreneurship

Entrepreneurship plays an important role in generating and commercializing innovation. Entrepreneurial initiative is one of Canada’s strengths: at 18.2 percent, Canada is ahead of its peers in the percentage of the population aged 18 to 64 who reported early-stage

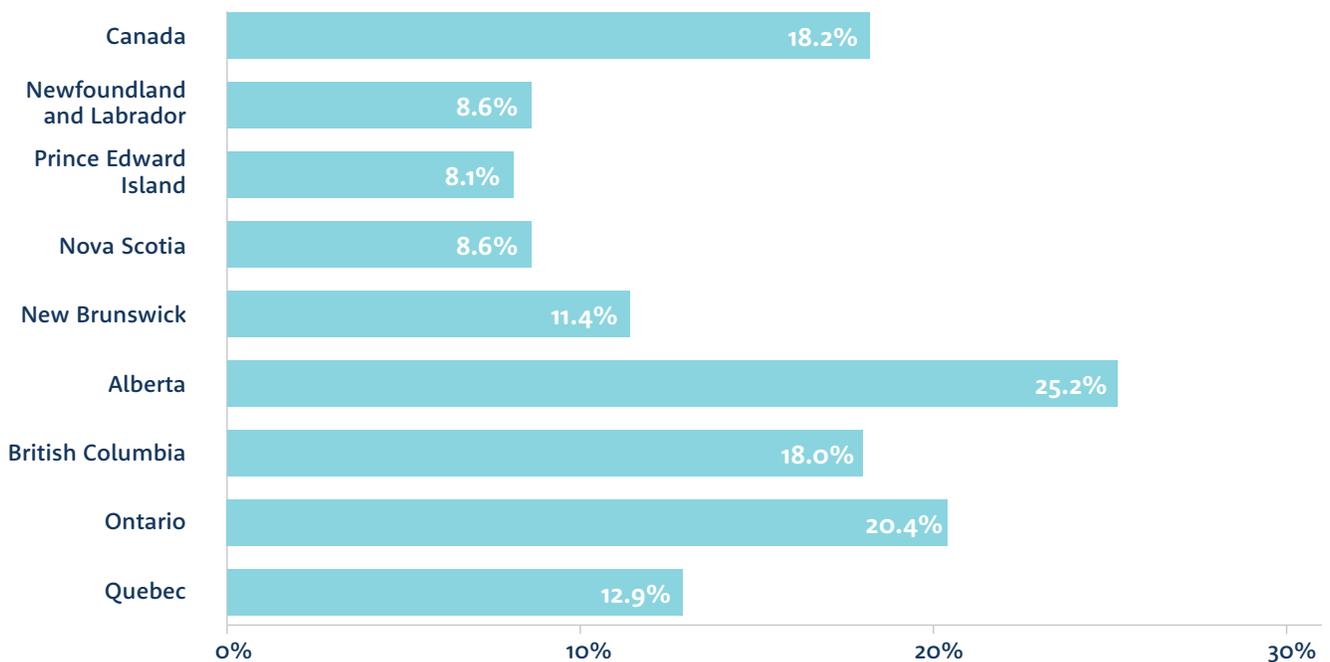
entrepreneurial activity, based on the 2019 Global Entrepreneurship Monitor.³² Nova Scotia ranks second among Atlantic provinces with 11.3 percent of the population aged 18 to 64 who report early-stage entrepreneurial activity,ⁱ but sits behind New Brunswick at 13.5 percent and well below the national rate and leading provinces such as Alberta (25.2 percent) and Ontario (20.4 percent).³³ This is an improvement for both Nova Scotia and Canada from 2014, when only 9.8 percent of those aged 18 to 64 in Nova Scotia, and 13.1 percent in Canada, reported early-stage entrepreneurial activity.³⁴ The impact of the COVID-19 pandemic on entrepreneurial initiative remains to be seen.

The number of start-ups in Atlantic Canada has been growing at an increasing rate from 263 in 2013 to 697 in 2019, with 371 of these companies

ⁱ Including intentions to start new businesses and making initial steps towards doing so.

Figure 6: Entrepreneurial initiative

Percentage of the population aged 18 to 64 who report early-stage entrepreneurial activity, 2019



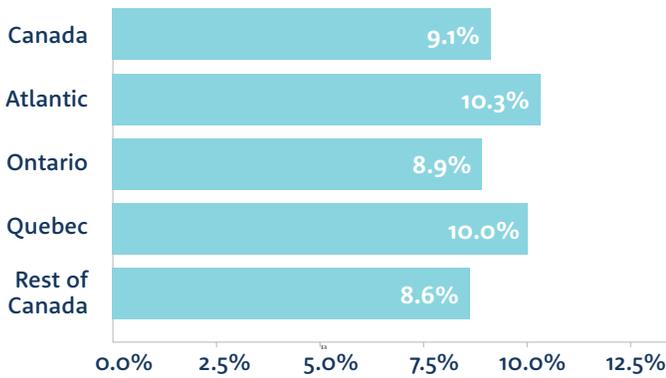
Source: Global Entrepreneurship Monitor (GEM)





Figure 7: Innovation among firms

Percentage of sales where the product or service is new to one of its markets by province, 2017



Source: Statistics Canada table 33-10-0180-01

in Nova Scotia. These 371 companies employ 3,190 people, 21 percent more than the previous year, and have seen revenue growth of 34 percent. As noted in the section on finance, only 14 percent of Nova Scotia start-ups have female CEOs. However, women are a major driver for the growing life sciences industry in Nova Scotia. Although only one fifth of start-ups are in the life sciences, one third of women-led companies are operating in that industry. For example, Halifax-based biopharmaceutical company IMV is one of the largest and most well-funded companies in biotech, and three quarters of its employees and over half of its management team are women.³⁵

Development

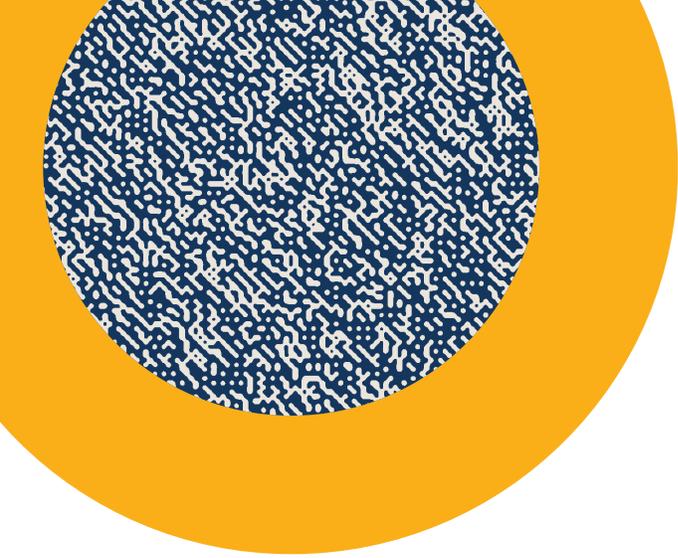
Business expenditures on research and development (BERD) is often considered an indicator of businesses' commitment to innovation, and therefore provides a useful, albeit indirect, gauge of innovation commitment and activity. At 0.35 percent (as a share of GDP), Nova Scotia's BERD was below the national rate of 0.87 percent and well below the OECD-wide rate of 1.66 percent in 2017. This statistic is for R&D *performed* in the business sector, but it is also worth exploring R&D *funded* by the business sector. In this both Nova Scotia and Canada do slightly worse, at 0.26 and 0.71 percent of GDP

respectively, indicating that the business sector funds less research than it performs.³⁶

While Nova Scotia, and Atlantic Canada as a whole, has lower BERD than other regions of Canada, in 2017 Atlantic Canada's firms reported that 10.3 percent of their sales were generated by goods or services that were new to one of their markets. This is the highest rate in Canada, with Quebec coming in second at 10.0 percent and Canada as a whole at 9.1 percent. The industry in Atlantic Canada that reported the highest portion was *Navigational, measuring, medical and control instruments manufacturing*, at 30 percent, which according to the Atlantic Startup Community includes two of Nova Scotia's fastest growing start-up sectors, ocean industries and medical measurement devices. This is followed by *Software publishers* and *Computer and electronic product manufacturing*, at 27.7 and 26.9 percent respectively. In contrast, the top five most innovative industries in Quebec are in manufacturing or wholesale, with the exception of the top industry—*Data processing, hosting and related services*.³⁷

Technology plays a critical role in the innovation economy, being both the application of current innovations and an enabler of future innovations. The adoption of information and communications technology (ICT) is therefore an indicator both of innovation occurring, and of innovation yet to occur. Canada's ICT investment of 2.1 percent (as a share of GDP) is below the OECD level of 2.2 percent, and well below the United States at 3.1 percent.³⁸ For provincial comparisons of ICT investment, we use a comparable, but not identical, measure based on Statistics Canada data that is the sum of investment in software and in computers and electronics. By this measure, in 2018 Canada had invested 2.26 percent of its GDP into ICT, and Nova Scotia came in second only to Ontario at 2.26 percent as well.³⁹ While this puts Nova Scotia in a relatively favorable position compared to other provinces, the global bar is higher. Nova Scotia may share Canada's challenges with respect to investing in and reaping the productivity benefits of technology.





Labour Force Statistics

Employment is a primary mechanism through which people participate in and benefit from the economy. Although occupations differ widely in their role in innovation, and labour force indicators reflect much more than inclusive innovation performance, persistent differences can tell us about the structural features of an economy. Differences in employment among demographic groups can reveal much about how the benefits and risks of the economy and the innovation economy are distributed. Indeed, when unemployment rises, some groups are more likely to lose their jobs than others.⁴⁰

Canada falls in the middle of the OECD in labour force participation and employment rates for working-age individuals (ages 20 to 64).⁴¹ As of January 2020 (pre-pandemic), Nova Scotia had fairly typical labour force statistics overall, with a somewhat over average unemployment rate at 6.7 percent compared to a national rate of 4.8 percent for those aged 25 and over. The effects of the pandemic have been felt across the country, and will continue to play an important role in the development of all labour markets. Nova Scotia, however, has recovered fairly well, with all three labour force statistics almost exactly at pre-pandemic levels (plus or minus a percentage point). As a result, the unemployment rate is almost equal to the national rate, at 6.8 percent for Nova Scotia and 6.7 percent for Canada.⁴²

Along the dimension of sex, while there are gaps between men's and women's labour force participation and employment, they tend to be smaller in Canada than in other G7 and OECD countries—with the notable exception of the Nordic countries.⁴³ These differences are even lower in Nova Scotia, with men having only a 0.8 percentage point higher employment rate, compared to a 6.7 percentage point difference nationally in January 2020. To be sure, there are long-standing barriers to women's labour force participation and employment in Canada, and since the pandemic and economic crisis set in women have experienced disproportionately high unemployment and reduced hours, leading to urgent calls for women-centred recovery plans. Canada's economy risks becoming more unequal in the years ahead.⁴⁴

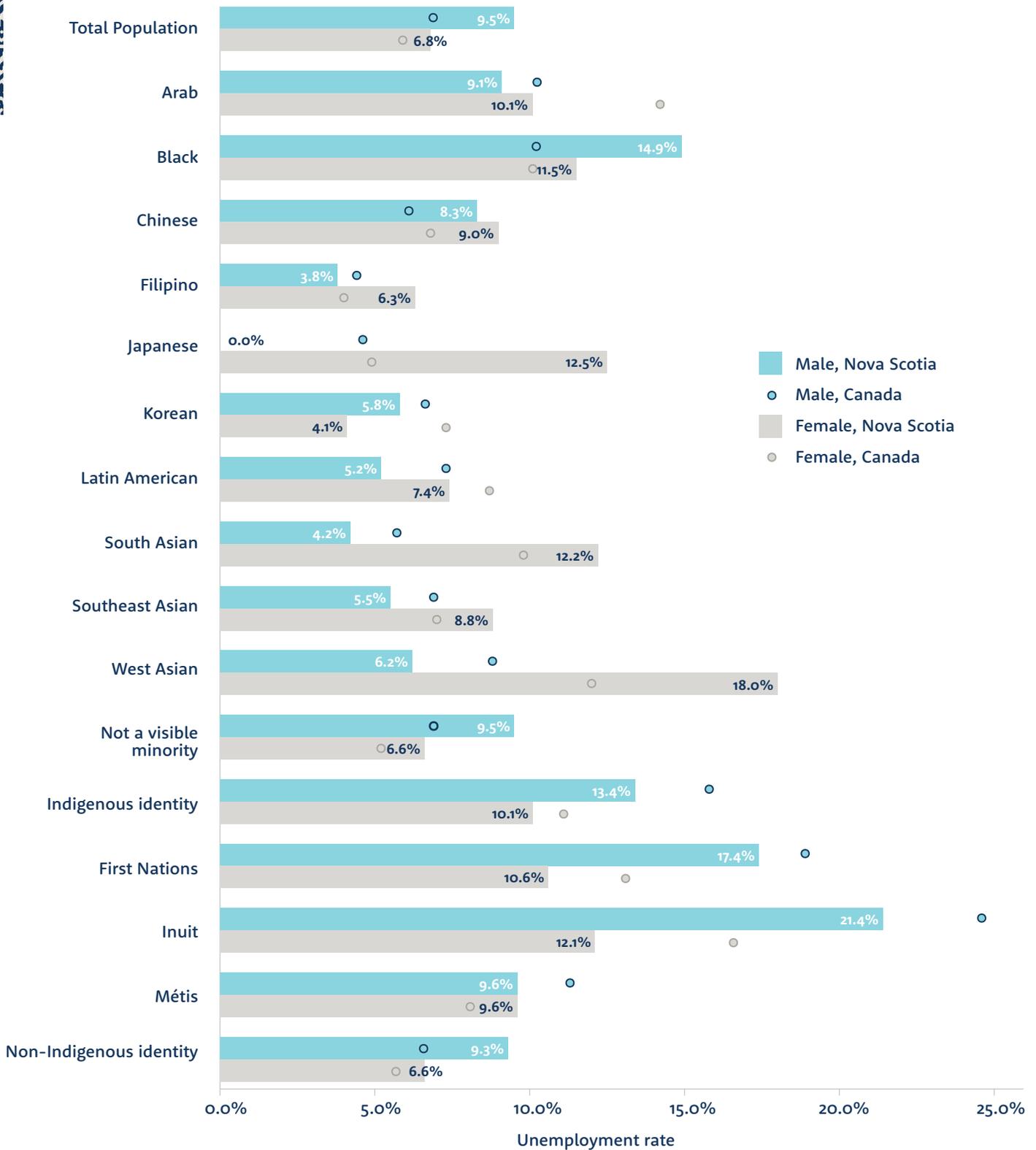
In Nova Scotia, most visible minority groups have better relative labour force outcomes in comparison to those not in a visible minority than they do in Canada overall. For example, in Canada those who identify as Arab had a higher unemployment rate by 5.4 percentage points in 2016, but in Nova Scotia the difference was only 1 percentage point. This is also true for Indigenous peoples, with a participation rate that was 4.1 percentage points lower than for non-Indigenous and an unemployment rate that was 3.7 percentage points higher. Both differences are roughly half of what they are in Canada overall. For others, notably for Black people and West Asian women, inequalities are worse. In Canada, Black people have an unemployment rate that is 6.4 percentage points higher than the overall rate, whereas in Nova Scotia this rate is 8.2 percentage points higher. Similarly, West Asian women have a higher unemployment rate by 6.1 percentage points in Canada, and by 11.2 percentage points in Nova Scotia.⁴⁵

People with disabilities have much worse labour outcomes than the overall population. While labour force participation for Canada's population as a whole was 80.9 percent in 2017, it was just 62 percent for people with disabilities. Participation rates vary by type and severity of

Figure 8: Unemployment in Nova Scotia versus Canada

Of those aged 25 to 64 by racial identity and sex, 2016

*The term racial identity here refers to Statistics Canada terms visible minority or Indigenous identity

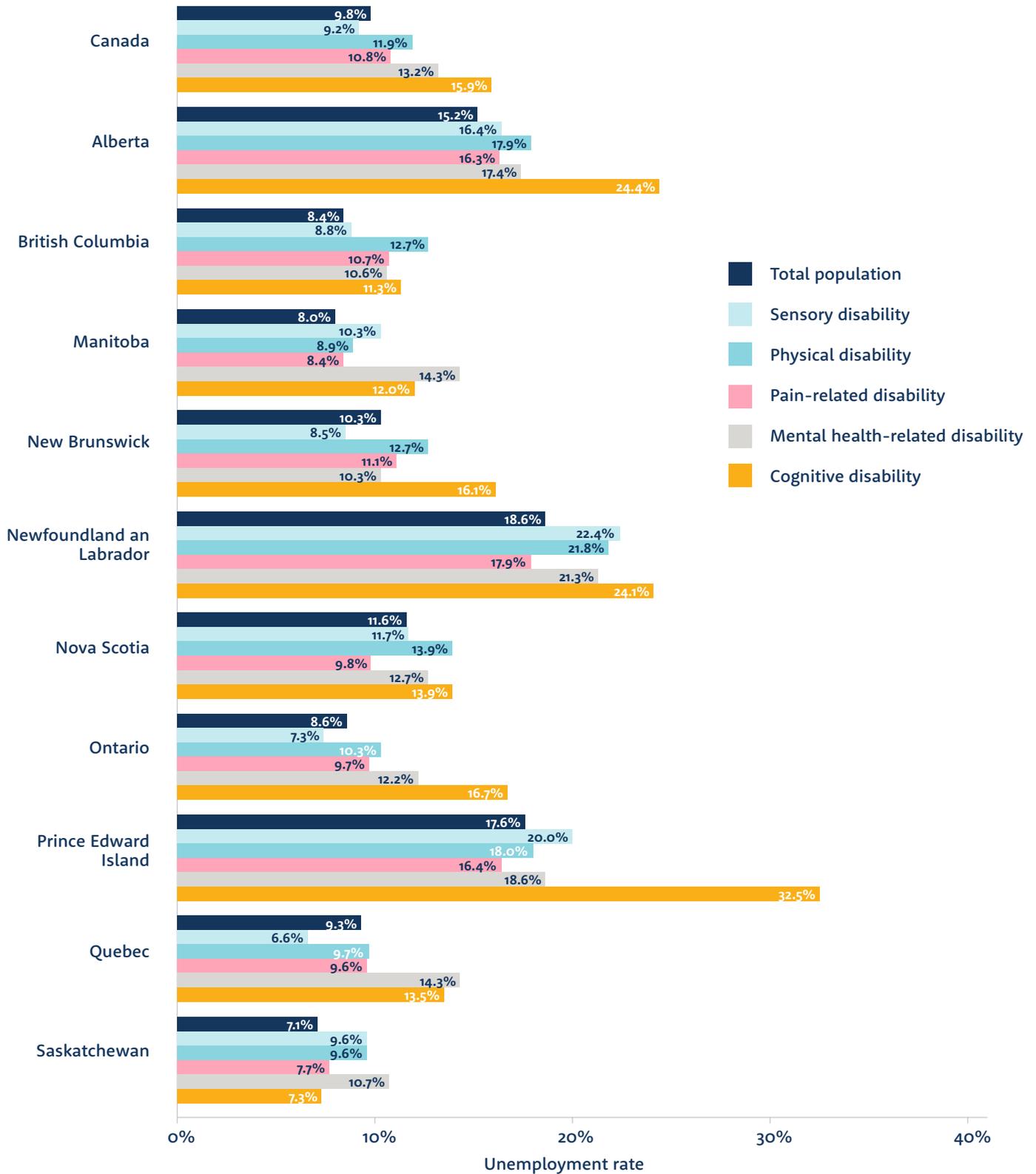


Source: Statistics Canada tables 98-400-X2016286 and 98-400-X2016267



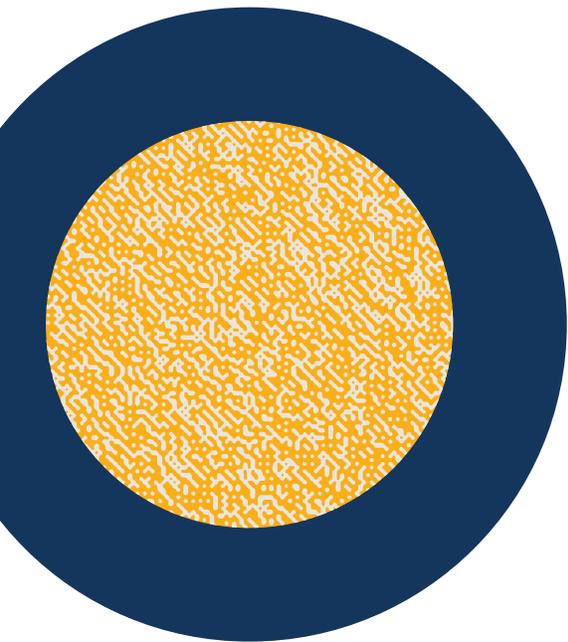
Figure 9: Unemployment of those with disabilities

By province and type of disability, 2016



Source: Statistics Canada table 13-10-0348-01





disability—ranging from 81 percent for those with “unknown disabilities”ⁱ to less than 48 percent for those with physical disabilities. Some people with disabilities may not want to work, may not be offered sufficient accommodations to do so, or may not be able to work, but among those who do want to work, unemployment rates are high. In 2017, Canada’s unemployment rate overall was 5.4 percent, whereas for people with disabilities it was 9.8 percent. For those with cognitive disabilities, unemployment was nearly 16 percent in 2017. It is worth noting that the lack of more recent employment data for people with disabilities is a stunning gap in Canada’s labour force statistics. In Nova Scotia, unemployment rates for those with disabilities are generally on par with the rest of the country; however, the unemployment rates for those with cognitive, mental health–related, or pain–related disabilities are comparatively better in Nova Scotia (5.7, 4.5, and 1.6 percentage points above the average, respectively) than in Canada

ⁱ Statistics Canada defines persons with an unknown disability as those “whose daily activities are limited because of any long-term health problem or condition other than the 10 specific types of disabilities identified by the survey (seeing, hearing, mobility, flexibility, dexterity, pain, learning, developmental, mental health and memory disabilities).” Statistics Canada, “Canadian Survey on Disability Reports,” Appendix B, last modified November 28, 2018, <https://www150.statcan.gc.ca/n1/pub/89-654-x/2018001/app-ann-b-eng.htm#a11>.

(9.5, 6.8 and 4.4 percentage points above the average, respectively).⁴⁶

The technology sector plays an important role in Canada’s and Nova Scotia’s innovation economies, innovation opportunities, and the potential for good incomes for those it employs. Accordingly, it is useful to see how employment opportunities are distributed in this frontier sector and in related technology-intensive occupations. In previous work, the Brookfield Institute defined tech occupations as those that involve a high degree of technology development or use. This has the benefit of both including occupations in non-tech sectors that are focused on tech and excluding less technology-intensive jobs in technology companies.⁴⁷

Nova Scotia has a lower participation rate in tech occupations at 3.8 percent, compared to 5.0 percent in Canada. While 25.2 percent of Canada’s tech workforce are women, in Nova Scotia only 18.9 percent of the tech workforce is made up of women. While participation rates of those who identify as belonging to a visible minority in Canada and in Nova Scotia are similar (7.7 percent and 7.4 percent, respectively), Nova Scotia is home to far fewer people who identify as belonging to a visible minority. So, while 31.4 percent of those in tech occupations identify as visible minorities nationally, only 9.3 percent of Nova Scotia’s tech workforce do. Particular visible minorities in Nova Scotia have especially high percentages of their population working in tech. For example, 20.1 percent of South Asians living in Nova Scotia work in a tech occupation, while only 3.6 percent of those not identifying as a visible minority do. Chinese and Latin Americans in Nova Scotia are also likely to work in tech, with 11.5 and 10.7 percent of their populations respectively employed in a tech occupation.⁴⁸

What Does this Mean for Nova Scotia?

Similar to the rest of Canada, the activities pillar reveals a mixed story for Nova Scotia. Investment in business R&D is very low, and total reported entrepreneurial activity is lower than the national rate. However ICT investment is strong, the

number of start-ups in Nova Scotia has been growing at an increasing rate, and Atlantic firms report a higher portion of sales attributed to novel products and services than the rest of the country. We also find stark inequalities with respect to opportunities to participate in the innovation economy. Women make up only 14 percent of start-up CEOs in Nova Scotia, despite being a major force in the province's biotech industry, and only 19 percent of the tech workforce. While labour market participation inequalities for many visible minorities and Indigenous groups are better in Nova Scotia than in the rest of Canada, they are still problematic, and are notably worse for Black people and West Asian women. Similar to the rest of Canada, inequalities also persist for Indigenous peoples and those with disabilities.

Pillar III: Outcomes



The Outcomes pillar reveals the extent to which the economy and society benefit from innovative activity, and the distribution of those benefits among people and communities. It includes metrics on economic output (e.g., GDP), wages, income and wealth distribution, and mobility.⁴⁹

Our definition of the innovation economy is fairly broad, and so is our notion of what the outcomes of that economy is. As many have pointed out, the economic output of Nova Scotia is concerning when compared to other provinces. Nova Scotians have lower wages than the national average, and poverty rates are among the highest in the country. Also concerning is that while Nova Scotia has lower pay inequalities along racial lines than the rest of the country in general, they are very high in tech occupations specifically.

Economic Output

On the basis of GDP, Canada is the tenth-largest economy on the planet, but Nova Scotia is just 1.7 percent of that economy. On a per capita basis, Canada's economy remains one of the strongest in the world, but it is average in the context

of the OECD. In 2019, Canada's GDP per capita was \$61,500 CAD, ranking 15th of 36 countries in the OECD. Nova Scotia's GDP per capita was \$47,800 CAD, which is the lowest of all provinces and territories. However, Nova Scotia has been catching up, with an average GDP per capita growth of 1.79 percent from 1980 to 2019 compared to a national rate of 1.27 percent, and only four provinces and territories with a higher growth rate. Canada's growth rate in general, however, is low by OECD standards, with the average country growth rate being 2.30 percent.ⁱ The OECD average is buoyed by less developed but rapidly growing countries. Still, Canada lags behind every other country in the G7 except Italy in average yearly percentage growth, although not by very much. Average growth rates of G7 countries range from 0.98 percent in Italy to 1.81 percent in the UK, with all G7 countries below the OECD average.⁵⁰

Canadian economists and policy-makers have long been concerned about the country's lagging productivity performance, and Nova Scotia is no exception.⁵¹ While Canada has enjoyed generally high standards of living, persistently slow productivity growth raises concerns about the

ⁱ Note: Not all 36 OECD countries have reported GDP per capita for all years; notably, these include previous Warsaw Pact members as well as Chile and Israel, for which data starts between 1987 and 1996.

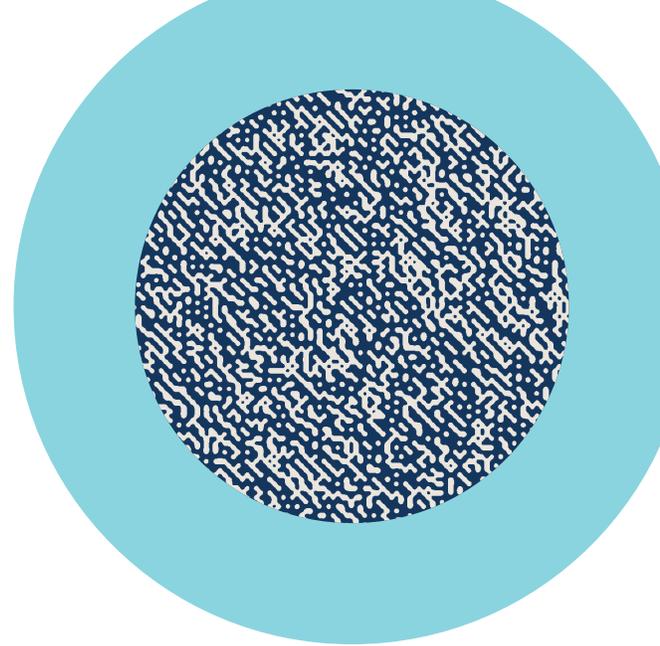
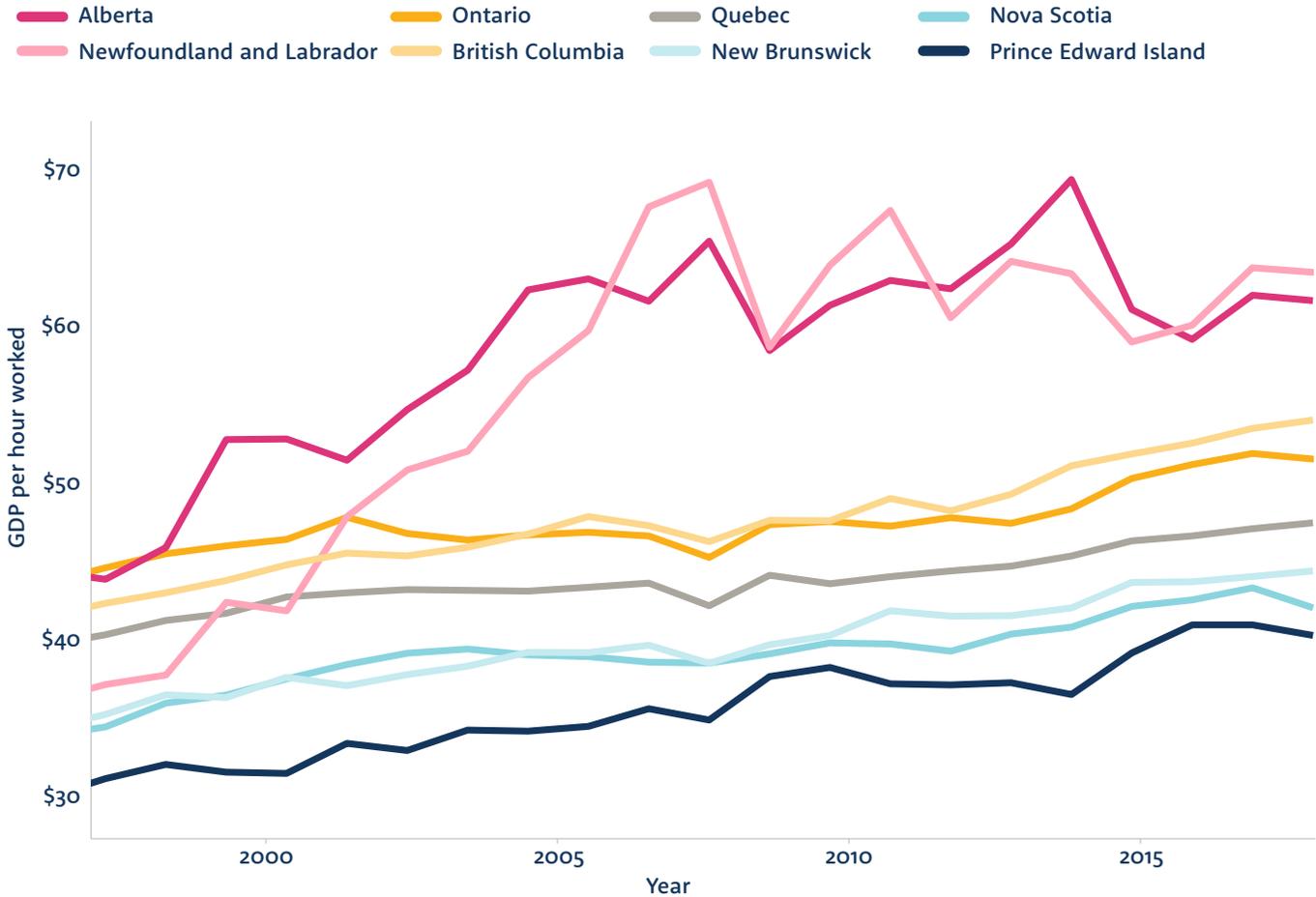




Figure 10: Provincial productivity

GDP divided by hours worked, 1997 to 2018



Source: Statistics Canada table 36-10-0222-01

long-term sustainability of those living standards. In 2019 Canada's labour productivity rate was \$70.30 CAD per hour, which was slightly below the OECD average. Nova Scotia's GDP per hour worked in 2018 was \$58.00 CAD, the lowest in Canada besides PEI. Since 2000, productivity growth in Canada has matched the median average yearly growth rate in the G7 at 0.92 percent. The highest growth rate is held by the United States, at 1.47%. While Nova Scotia's growth rate of 0.82 percent was the third-lowest growth rate among the provinces, it is worth noting that Ontario and Quebec were the lowest.⁵² Low productivity is a concern for future economic growth in the province. It is worth noting, however, that measures to boost productivity would need to be complemented by measures to boost wages across income brackets, to capture the benefits

of productivity for the average Nova Scotian and to avoid the trend of declining labour share of income seen across the OECD.⁵³

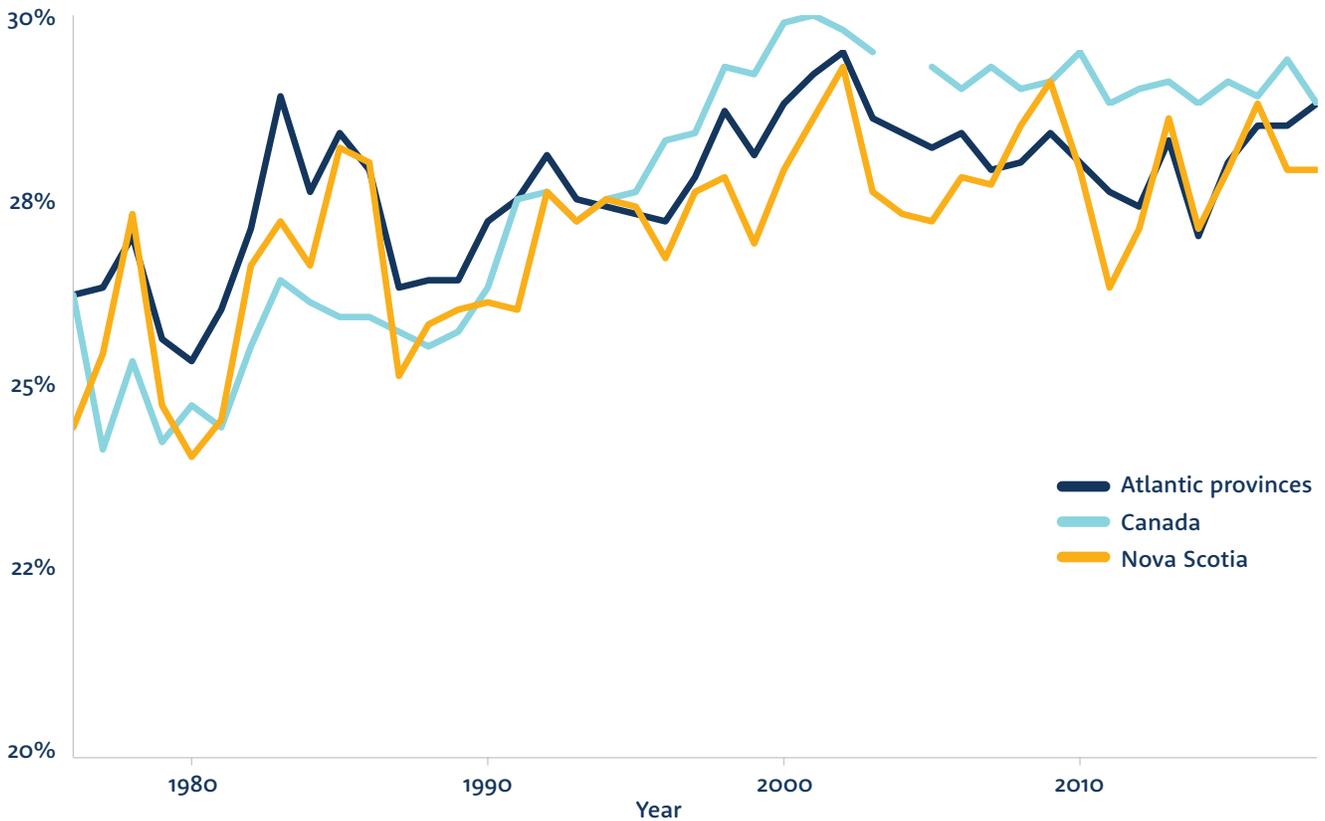
Income and Distribution

Canada has a higher average wage than most other OECD countries, but Nova Scotians are among the lowest paid in Canada. In 2019, according to the OECD, the average Canadian annual wage of \$53,200 USDⁱ was higher than the average OECD country (\$43,200 USD). According to the 2016 Census, however, Nova Scotia had

ⁱ The calculation of average annual wages is done by the OECD, and is obtained "by dividing the national-accounts-based total wage bill by the average number of employees in the total economy, which is then multiplied by the ratio of the average usual weekly hours per full-time employee to the average usually weekly hours for all employees."

Figure 11: Share of income by highest decile

Percentage of income earned by the top 10 percent of earners

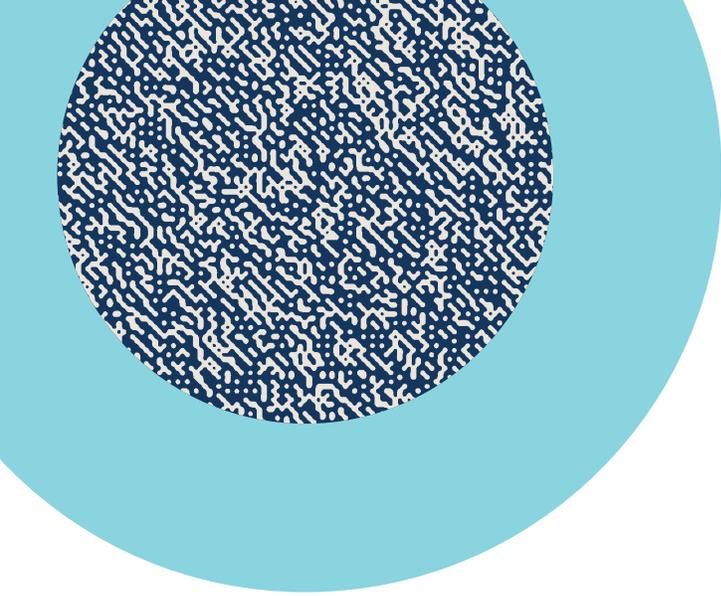


Source: Statistics Canada table 11-10-0193-01

the third-lowest average wages, salaries, and commissions at \$40,200 CAD, with only fellow Atlantic provinces of PEI and New Brunswick having lower.⁵⁴

While per capita GDP and average wages are useful indicators of overall income and prosperity, how that income and wealth is distributed is perhaps more important, not only for the health and well-being of people generally, but also as a foundation for future opportunities in education, the labour market, and the innovation economy more specifically. Inequality can be measured many ways, but two objectives are central. The first is to determine how unequal a distribution is overall. The second is to identify patterns, if any, in the demographic characteristics of who gets more and who gets less.

A common way to measure inequality is the Gini coefficient. The measure ranges from 0 to 1, with 0 indicating perfect equality (everyone has exactly the same income) and 1 indicating perfect inequality (one person earns all the income). We can determine the Gini coefficient using different notions of income, and here we look at income inequality both before and after taxes and transfers. According to Statistics Canada, Nova Scotia's before-tax Gini is 0.430, slightly more unequal than Canada at 0.428, indicating that Nova Scotia has an income distribution on par with the rest of Canada. Among provinces and territories, Nova Scotia ranks sixth, and second in the Atlantic after PEI at 0.424. After tax is taken into account, Gini decreases due to income redistribution, with Nova Scotia falling to 0.286 and Canada falling to 0.303. This means that Nova Scotia has a more equal distribution after



taxes, indicating that taxes are more effective at income redistribution in Nova Scotia. After tax, Nova Scotia ranks fourth among provinces and territories and third among Atlantic provinces.⁵⁵ The OECD uses a different methodology to calculate household income, and sometimes comes up with a different Gini than Statistics Canada. According to the OECD, Canada had a before-tax Gini of 0.406, which is lower (more equal distribution) than the OECD average of 0.414. However, after taxes Canada's Gini drops less than most countries, placing us 20th out of 36 countries, implying that our redistributive activities are less robust than other countries'.

Distribution by income decile—an exercise in which all individuals are ordered by their adjustedⁱ after-tax income and divided into 10 equal groups, and the portion of the income earned in Canada that goes to each of these groups is calculated—paints a more granular picture. In 2018, Nova Scotia had a similar income distribution to Canada overall. In Canada, 28.8% of income earned went to people in the top decile, and 16.8% to people in the next highest decile. Similarly, in Nova Scotia 27.9% of income went to the top decile and an additional 17.4% to the next. In other words, nearly half of all income earned in Canada and in Nova Scotia goes to just 20 percent of the population. For both Canada and Nova Scotia, each decile

ⁱ “Adjusted” refers to how Statistics Canada handles households by dividing the household income by the square root of the household size.

below the top two earns a little more than two percentage points less on average than the one before. In Canada, the third decile earns 13.5 percent; the fourth earns 11.1 percent; and so on until we reach the second-lowest decile, which earns only 2.4 percent, and the lowest, which earns 0.3 percent. In Canada, distribution by decile has been fairly constant since the 1970s, with the exception of a significant increase in the 1990s from 25 percent to 30 percent in the proportion of income earned by those in the highest decile. Nova Scotia has seen a little more variation in the percentage earned by the top decile, but it has always remained slightly above 25 percent.⁵⁶

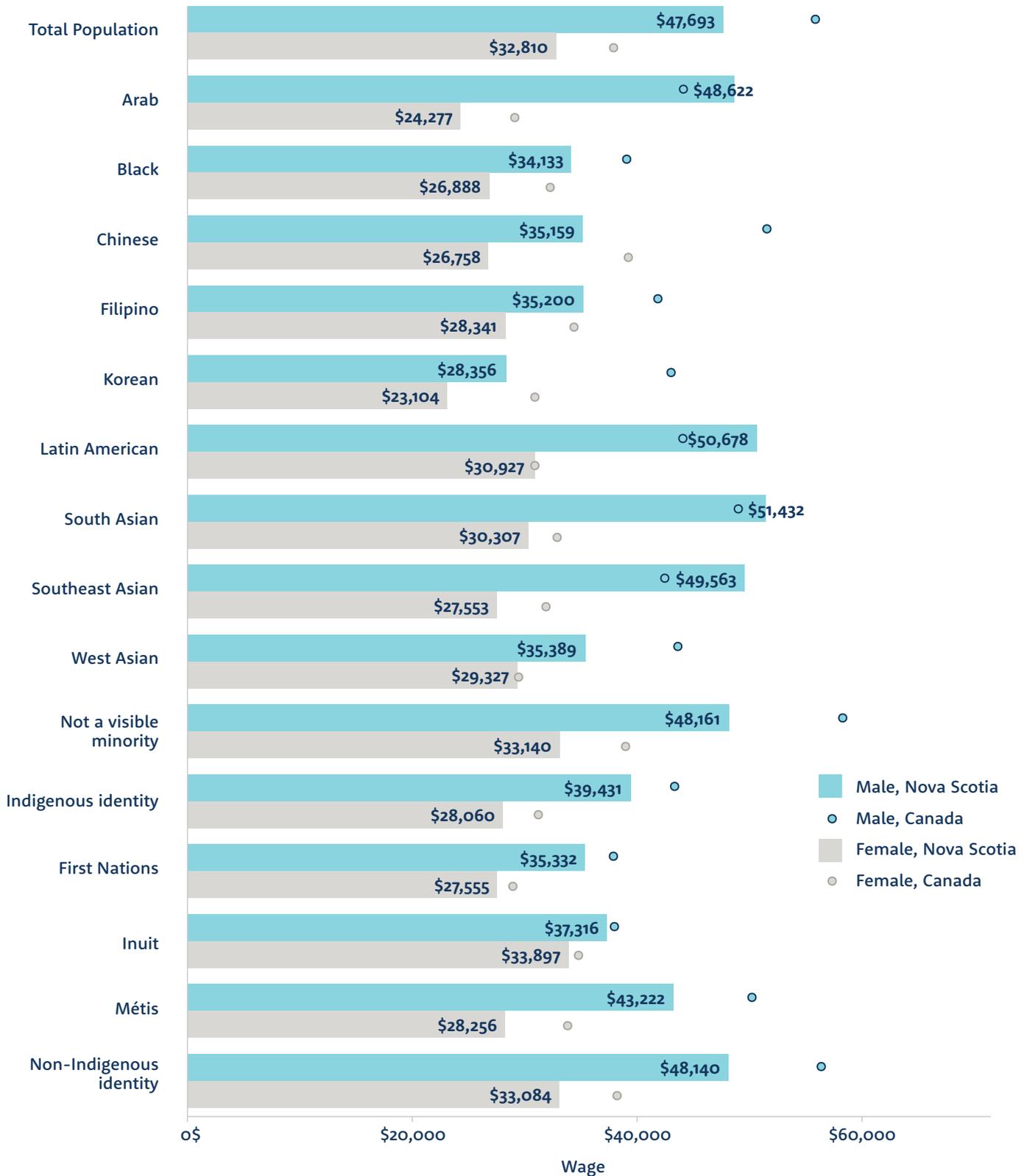
Income distribution patterns track demographic characteristics in troubling ways. Those who earn more or less are not distributed randomly by gender, race, and other characteristics. Rather, who earns more or less often tracks these identities. Income inequalities by gender are stark. In 2016, men in Canada earned an average of \$18,000 or 47 percent more in wages, salaries, and commissions than women in Canada. In absolute terms the gender gap is smaller in Nova Scotia, with men earning \$14,900 more, but in percentage terms it is roughly equal (men earn 45 percent more). The differences were largest in Alberta (with men earning \$32,500 more on average than women, or 74 percent) and Newfoundland and Labrador (\$23,400, or 69 percent).

Those in Canada who identified as being in a visible minority earned \$9,000 less than those not considered visible minorities in 2016. The largest difference was seen in Alberta, where visible minorities earned \$16,849 less than those not considered visible minorities. These differences were much lower in the Atlantic provinces, with Nova Scotia recording a difference of \$6,885 and Newfoundland and Labrador just \$1,315. In Nova Scotia, Southeast Asians, and Latin Americans do much better in comparison to non-visible minorities than in Canada overall, with the men in those groups earning more than non-visible minorities. The difference in wages between those who identify as Black or Filipino and non-visible minorities in Nova Scotia is significant, at

Figure 12: Wages in Nova Scotia versus Canada

By racial identity and sex, 2016

*The term racial identity here refers to Statistics Canada terms visible minority or Indigenous identity

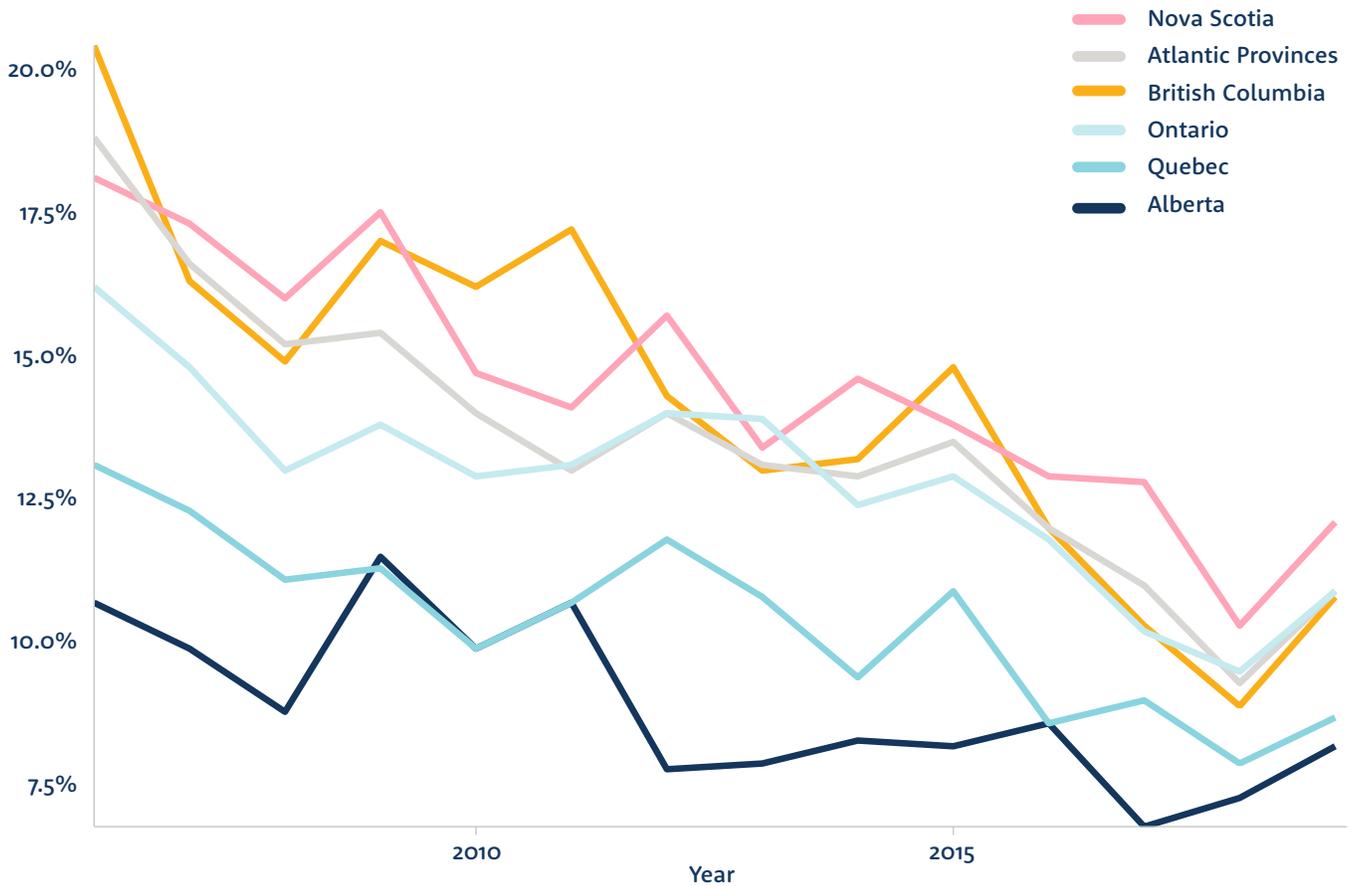


Source: Statistics Canada tables 98-400-X2016210 and 98-400-X2016170



Figure 13: Poverty

Percentage of those who cannot afford a basic basket of goods by province from 2006 to 2019



Source: Statistics Canada table 11-10-0135-01

\$10,300 and \$9,300, about the same as in Canada, and those who identify as Korean do worse. Additionally, those who identify as Japanese or Chinese have a much higher wage difference in Nova Scotia than in Canada. Indigenous people in Canada made \$10,300 less than non-Indigenous people on average. This difference was higher for First Nations (\$14,200) and Inuit (\$11,200), but lower for Metis (\$5,500). In Nova Scotia this difference was lower for all Indigenous groups, but was still fairly high. For example, First Nations earned \$9,302 less than non-Indigenous people in Nova Scotia.⁵⁷

The wage premium for tech is \$24,800 in Nova Scotia, compared to a wage premium of \$32,200

nationally. The wage gap in Nova Scotia for tech occupations is still high, at \$10,400, but is significantly lower than the national tech wage gap at \$18,000. Especially distressing is that those working in tech occupations who identify as a visible minority make \$13,400 less than those who do not identify as a visible minority. In comparison, nationally this wage gap is only \$3,100. It should be noted, however, that the sample of visible minorities in tech where we have income data is quite small, at only 1,850 individuals.

Poverty is another important indicator of who has benefited from economic activity and who has not. One measure of poverty is how many



households could not afford a basket of goods representing what would be required for a modest, basic standard of living. In 2019, Nova Scotia had the second-highest poverty rate of any province at 12.1 percent, compared to a national rate of 10.1 percent. These rates are both significant improvements over 2006, when Canada had 15.6 percent of the population living in poverty and Nova Scotia had 18.1 percent. Child poverty in Nova Scotia has also been steadily decreasing, from 17.0 percent in 2015 to 12.1 percent in 2019. It is worth noting that poverty rates in Nova Scotia may be skewed to sample size; Statistics Canada did, however, give the data a grade of “C,” which denotes “Good.”⁵⁸

Finally, another important aspect of distribution is the distribution of wealth. While Statistics Canada does not provide provincial breakdowns of wealth earned by particular quantiles, we can use a simple measure to get a sense of overall inequality. The ratio of mean to median wealth is a simple but overall effective measure of wealth inequality. The higher a geographic area’s ratio, the higher the amount held by the most wealthy in that area. In 2016, the ratio between mean and median wealth in Canada was 2.27, well above the median OECD ratio of 1.95, which implies that Canada has a more unequal wealth distribution than most countries. At 2.04, the ratio in Nova Scotia is lower than the overall ratio in Canada, and is only beat out by Ontario (2.02) and Manitoba (1.82).⁵⁹

What Does this Mean for Nova Scotia?

The weakest pillar for Nova Scotia is Outcomes. Economic output and productivity is disappointing, with the lowest GDP per capita of any province and the second-lowest GDP per hour worked. Nova Scotia has lower wages than in the rest of Canada, and while the overall income distribution within the province is similar to the national distribution, there are stark racial inequalities. This is especially true for tech workers, with those who identify as part of a visible minority earning \$13,400 less on average than those who do not identify as part of a visible minority. To ensure widespread prosperity,

how Nova Scotia invests in innovation and who benefits will be just as important as whether key innovation metrics can be boosted. Improving innovation outcomes without ensuring a more equal distribution of income and wealth could skew these inequalities even more significantly.

Conclusion

Nova Scotia has a remarkably strong base from which to build a thriving and inclusive innovation economy, with notable strengths in areas such as education, research, venture capital investment, and start-up activity. Like the rest of Canada, however, it struggles with technology investments and productivity, and is weaker than other parts of Canada in aggregate entrepreneurial activity, employment outcomes, and economic output. Perhaps most notably, Nova Scotia is home to stark and troubling inequalities across gender and visible minority groups (as defined by Statistics Canada). Expanding participation and improving equity in the innovation economy for women and racialized groups should be the focus of any plan to build Nova Scotia’s innovation economy. There are emerging signs of progress on some fronts, with the province moving in the right direction in terms of a strong start-up ecosystem in key industries such as ocean technology and biotech, with growing participation from women.



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