

Overcoming Digital Divides:

What We Heard and Recommendations

January 2022

Nour Abdelaal | Sam Andrey



Presented by



Sponsored by



Presented by



The Ryerson Leadership Lab is an action-oriented think tank at Ryerson University dedicated to developing new leaders and solutions to today's most pressing civic challenges. Through public policy activation and leadership development, the Leadership Lab's mission is to build a new generation of skilled and adaptive leaders committed to a more trustworthy, inclusive society. For more information, visit ryersonleadlab.com.
[@RULeadLab](https://twitter.com/RULeadLab)



We are 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. For more information, visit brookfieldinstitute.ca.
[@BrookfieldIIE](https://twitter.com/BrookfieldIIE)



We are an Indigenous-led not-for-profit working to ensure that Indigenous peoples have the tools, education and support to thrive in the digital age. We are mandated by Indigenous peoples in British Columbia to advance digital and connected technologies. For more information, visit technologycouncil.ca/
[@FN_TechCouncil](https://twitter.com/FN_TechCouncil)



SFU Public Square, a signature initiative designed to spark, nurture and restore community connections, establishes Simon Fraser University as the go-to convener of serious and productive conversations about issues of public concern. For more information, visit sfu.ca/publicsquare.html
[@SFUPublicSquare](https://twitter.com/SFUPublicSquare)

Sponsored by



At TELUS, we're building a better future for all Canadians by using our technology for good and giving back to our communities. Our social purpose is at the heart of everything we do as a world-leading technology company and continues to set us apart. Together, let's make the future friendly. For more information visit telus.com
[@TELUS](https://twitter.com/TELUS)

CONTRIBUTORS

Nour Abdelaal, Policy Analyst, Ryerson Leadership Lab

Sam Andrey, Director of Policy & Research, Ryerson Leadership Lab

Karim Bardeesy, Executive Director, Ryerson Leadership Lab

Kiri Bird, Director, Strategic Initiatives, First Nations Technology Council

Nisa Malli, Work Stream Manager, Innovative + Inclusive Economy, Brookfield Institute for Innovation + Entrepreneurship

Janet Webber, Executive Director, SFU Public Square

Denise Williams, Chief Executive Officer, First Nations Technology Council

Seth Erais, Program Manager, SFU Public Square

Braelyn Guppy, Marketing & Communications Lead, Ryerson Leadership Lab

Doug Hamilton-Evans, Communicators Manager, SFU Public Square

Chloe Sjuberg, Communications Coordinator, SFU Public Square

Zaynab Choudhry, Design Lead, Ryerson Leadership Lab

Jessica Thomson, Communications and Marketing Specialist, Brookfield Institute for Innovation + Entrepreneurship

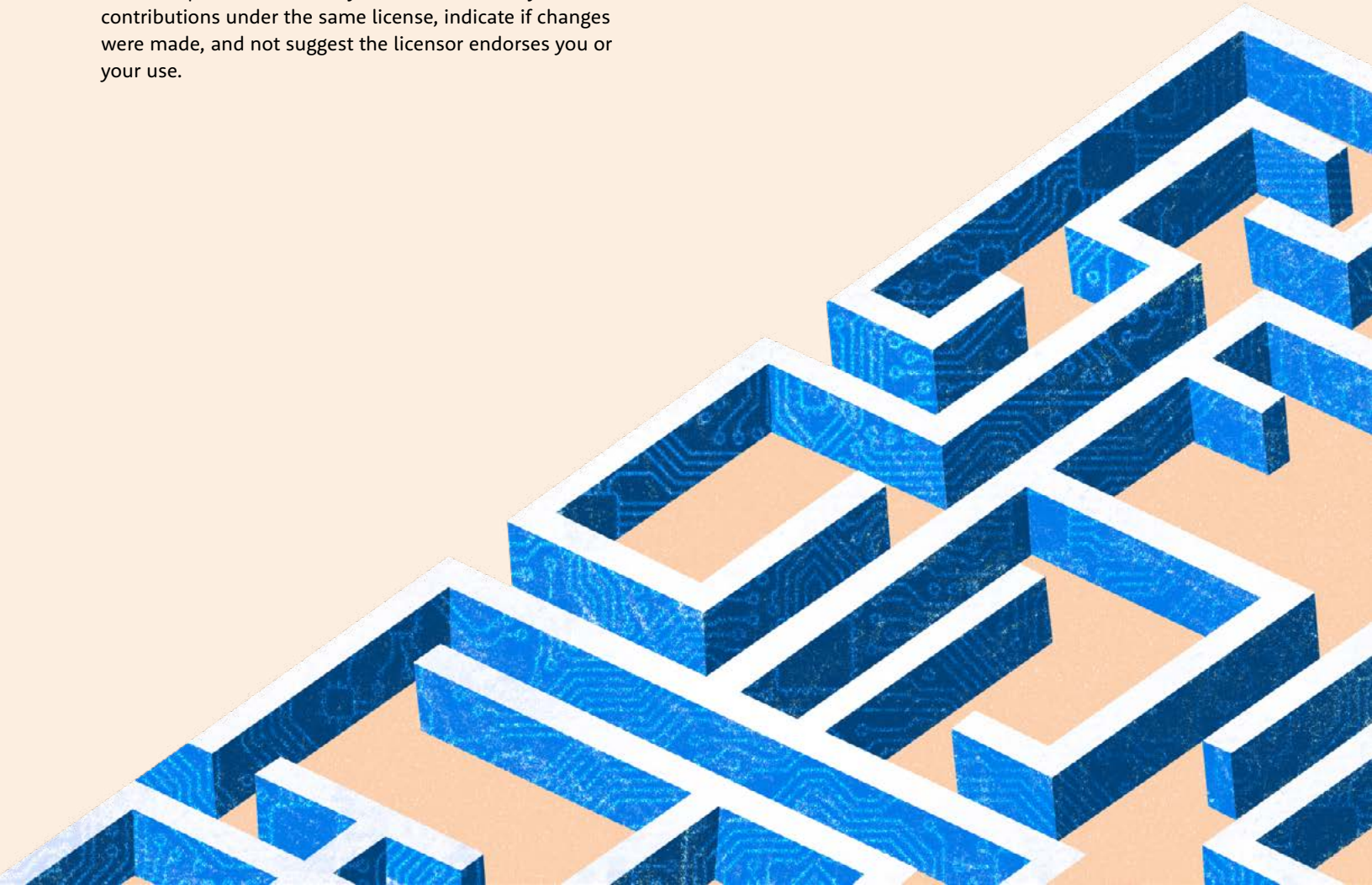
How to Cite this Report

Abdelaal, N., Andrey, S. (2022, January).
Overcoming Digital Divides Series: What We
Heard. Retrieved from <https://www.ryersonleadlab.com/overcoming-digital-divides>

© 2022, Ryerson University
350 Victoria St, Toronto, ON M5B 2K3



This work is licensed under a [Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International License](https://creativecommons.org/licenses/by-nc-sa/4.0/).
You are free to share, copy and redistribute this material provided you: give appropriate credit; do not use the material for commercial purposes; do not apply legal terms or technological measures that legally restrict others from doing anything the license permits; and if you remix, transform, or build upon the material, you must distribute your contributions under the same license, indicate if changes were made, and not suggest the licensor endorses you or your use.





EXECUTIVE SUMMARY

From March to June 2021, the Ryerson Leadership Lab, Brookfield Institute for Innovation + Entrepreneurship, First Nations Technology Council and Simon Fraser University's Public Square, supported by title sponsor TELUS, co-presented *Overcoming Digital Divides*, a six-part workshop series that explored the challenges and solutions to **close Canada's digital divides** and expand meaningful digital inclusion for all people in Canada.

The series aimed to unpack misconceptions about the digital divide in Canada, including beliefs that accessing reliable high-speed internet can almost entirely be attributed to an urban-rural infrastructure problem. The series illuminated how the digital divide is comprised of a *series* of divides that are correlated with socio-economic and demographic factors, including income, age, Indigeneity and ability. Expert speakers and attendees from community, government, academia and industry perspectives emphasized the intersectionality of the digital divide, which has always been multifaceted, complex and intertwined in a country as large as Canada.

6 workshops

26 speakers

1,300 participants

1,000 recording views

730 ideas and comments

82%

agreed the workshops helped move the conversation on Canada's digital divide forward in a constructive manner

88%

agreed that the workshops included diverse and relevant perspectives on the digital divide in Canada

This report summarizes the main themes shared at the six workshops, as well as **sharing new data** on these issues from Statistics Canada's latest survey from November 2020 to March 2021:

- **Internet infrastructure:** Too many rural, remote and Indigenous communities still lack the internet infrastructure necessary to bring sufficient connectivity to every home. Emerging initiatives, such as the expansion of low-Earth orbit satellites, are a promising step in expanding internet access to places not connected to fibre-optic cables and providing faster data transfer rates.
- **Affordability:** Although progress in expanding internet availability through infrastructure development is accelerating, governments need to place renewed emphasis on and expand programming to ensure affordable connectivity for lower-income households.
- **Digital literacy and skills:** Underserved groups, particularly older adults and marginalized youth, depend on digital literacy and skills programming to get access to devices and software, and better understand how technologies work; how to protect their online safety; and how to develop the right critical thinking skills necessary to meaningfully and safely engage in online spaces.
- **Public internet access:** Public libraries, community centres and Wi-Fi hotspots are a critical point of digital access for individuals without consistent or reliable home internet access and will remain crucial for hard-to-reach individuals left out of the telecommunications market system.
- **Impact of the COVID-19 pandemic:** The expansion of remote work and online delivery of critical services impacted many vulnerable groups, including low-income individuals, older adults, and people with disabilities, who were often isolated and excluded from online spaces and information while simultaneously being at a higher risk of contracting and experiencing more severe illness from COVID-19.
- **The role of government in supporting effective multi-level coordination:** Private, public and community organizations tackling digital divides across the country are often working in disconnected silos, which is diminishing the effectiveness of improving systemic digital connectivity. Canada's strategy to expand internet connectivity to all people in Canada still lacks an outcome-focused and coordinated approach.

OVERCOMING DIGITAL DIVIDES: WHAT WE HEARD

POLICY RECOMMENDATIONS:

Based on the advice and discussions from the workshop series, we offer five main policy recommendations to address Canada's digital divides moving forward:

1. Develop a **comprehensive strategy to close Canada's digital divides**, including setting targets for the proportion of Canadian residents connected to sufficient digital services, not just the availability of basic connectivity, and guided by new research that more granularly identifies specific communities facing gaps in internet access and connectivity.
2. Expand the eligibility of affordability initiatives **that subsidize the provision of internet services** to include all individuals below the poverty line and ensure services are provided at sufficient speeds.
3. Explore new public funding models that **invest in community-based and owned networks** to increase public access, community control and competition, in particular by working with Indigenous communities and municipalities not yet connected to sufficient service.
4. Develop a cross-sectoral network of public, private and community organizations to **coordinate initiatives** focused on enhancing digital literacy, and access to devices and software, for underserved and vulnerable communities, such as older adults, youth, low-income individuals, and people of colour.
5. Strengthen **accessibility standards** and initiatives to remove digital inclusion barriers for people with disabilities, including greater enforcement mechanisms.

TABLE OF CONTENTS

| | |
|--|------------------|
| <u>Setting the Scene</u> | <u>7</u> |
| <u>The Infrastructure Problem</u> | <u>7</u> |
| <u>Moving Beyond Infrastructure: Affordability</u> | <u>9</u> |
| <u>The Digital Divide Amid a Pandemic</u> | <u>11</u> |
| <u>The Digital Divide in an Increasingly Digital Economy</u> | <u>13</u> |
| <u>More Than Just an Internet Connection: Access to Technology Devices</u> | <u>14</u> |
| <u>More Than Just an Internet Connection: Digital Skills and Literacy</u> | <u>15</u> |
| | |
| <u>Part 1: Indigenous, Remote and Rural Communities</u> | <u>19</u> |
| | |
| <u>Part 2: Low-Income Communities</u> | <u>23</u> |
| | |
| <u>Part 3: Older Adults and Digital Literacy</u> | <u>26</u> |
| | |
| <u>Part 4: People with Disabilities</u> | <u>29</u> |
| | |
| <u>Part 5: Public Internet Access</u> | <u>32</u> |
| | |
| <u>Part 6: Youth and Digital Skills</u> | <u>35</u> |
| | |
| <u>Conclusion</u> | <u>38</u> |

SETTING THE SCENE

The digital divide in Canada has long been characterized as an urban-rural challenge.¹ Policies addressing the issue have generally focused on addressing infrastructure gaps to bring faster digital connectivity to underserved communities. However, digital inequalities are also significantly correlated with demographic and socio-economic factors. Indigenous and remote communities, low-income individuals, older adults, people with disabilities, youth and newcomers are less likely to have an internet connection at sufficient speed.^{2 3 4 5} Understanding the unique needs and disproportionate impacts of the digital divide on marginalized and vulnerable groups in Canada is the first step to not only expanding adequate internet infrastructure to those without digital connectivity, but also ensuring that adequate internet services are affordable and accessible to all underserved people in Canada.

Throughout this series, we define the **digital divide** as the gap that exists between those that do and do not have access to digital services. Several interrelated factors impact this access, including:

- availability and speed of internet infrastructure;
- affordability of home internet service;
- demand on internet connection within a household;
- access to affordability and quality of the devices and software needed to connect to the internet service;
- digital literacy to enable meaningful use of the devices, software and services; and
- online safety and security required to use the services with confidence.

THE INFRASTRUCTURE PROBLEM

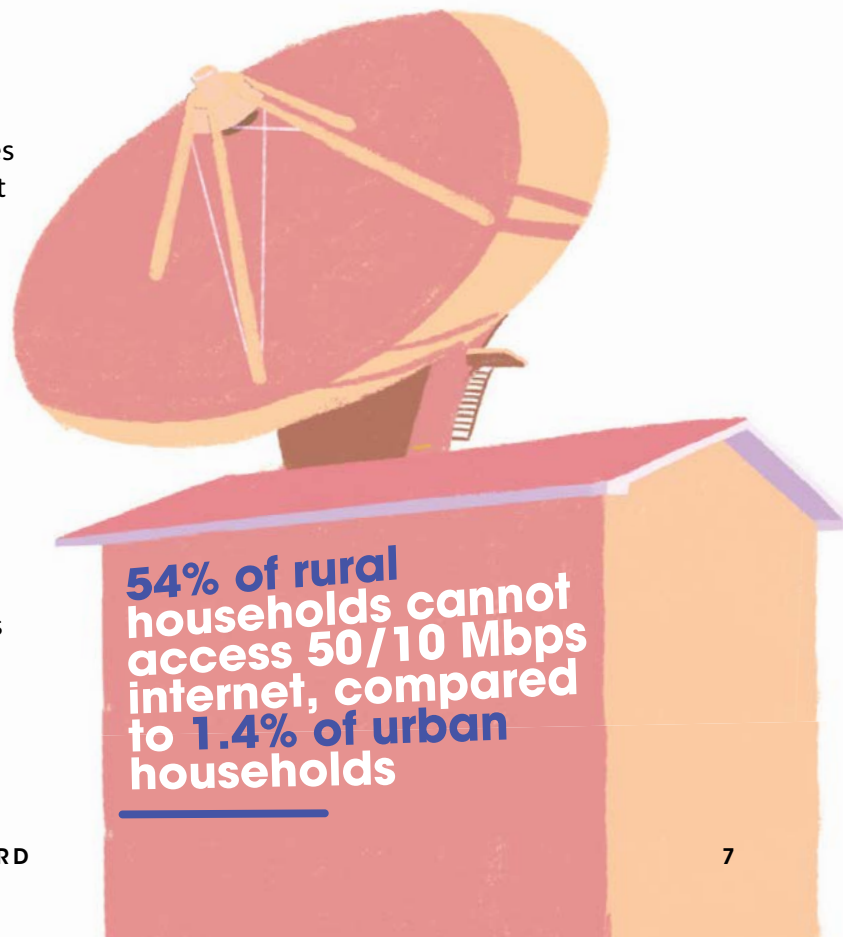
In 2016, the CRTC set a new universal service objective to make fixed (non-mobile) broadband internet service available to homes and businesses at speeds of at least 50 megabits per second (Mbps) download, 10 Mbps upload, and with unlimited data use.⁶ The federal government has also set a goal to make 50/10 Mbps unlimited

connectivity available to 90% of Canadian residents by the end of 2021, 95% by 2026, and all households by 2030.⁷ Fixed internet is generally more cost-effective and energy-efficient than mobile internet services.

The CRTC's 50/10 Mbps target speed allows individuals to comfortably stream high-definition videos and games, download large files faster and provides greater bandwidth to accommodate more internet-connected devices in a single household.

The Urban-Rural Divide

Canada continues to face urban-rural inequities in internet availability at sufficient speeds. Although 98.6% of urban households in Canada have internet speeds available at the 50/10 Mbps target, more than half of rural households (54%) and almost two-thirds (65%) of First Nations reserves cannot connect to the internet at the same speed.⁸



Internet availability at the CRTC speed target also varies significantly by province: more than 90% of households in Quebec and British Columbia have the internet available at the CRTC target; however, Prince Edward Island (61%), Saskatchewan (71%), Manitoba (73%) and Nova Scotia (78%) have the least available coverage.⁹ No territory has internet available at the CRTC's speed target and the highest download speed in Nunavut is only 5 Mbps.¹⁰ Such differences in the availability of home internet connections at sufficient speeds between provinces and territories reveal the need to improve internet infrastructure to target underserved areas in Canada with relatively more challenging terrains and less developed landscapes.



Highest download speeds in Nunavut are only 5 Mbps

Expanding infrastructure to sparsely developed areas has not been profitable enough for private internet service providers to build adequate internet infrastructure in Canada's remote areas. Weather conditions in remote areas, particularly in Canada's North, can make it especially difficult to install and maintain sophisticated internet infrastructure.¹¹ Piecemeal approaches to infrastructure developments for remote communities can also exacerbate information gaps and digital inequities between jurisdictions, making it more difficult for different communities to connect with one another.¹²

Progress is Accelerating

Despite gaps in the availability of internet connectivity at the CRTC target across provinces and territories, the expansion of internet infrastructure has been accelerating. The development of broadband networks in rural communities increased internet availability at download speeds of 50 Mbps or higher by 29 percentage points in two years, from 43% in 2018 to 65% in 2019.¹³ In the latest CIUS, 74% reported

download speeds of 50 Mbps or higher in 2020.¹⁴ More than 890,000 rural and remote households, or about one in three, are in the process of having 50/10 Mbps internet available due to federal investments.¹⁵ By March 2021, 175,000 rural and remote households had been reached with new infrastructure; and the government estimates that, by the end of 2021, over 435,000 households will have been.¹⁶

Public Initiatives Addressing the Infrastructure Problem

A number of federal and provincial initiatives have driven this expansion of internet infrastructure to rural and underserved areas. The federal 2021 budget promised an additional \$1 billion to the Universal Broadband Fund for a total of \$2.75 billion in recent federal infrastructure investments to expand internet infrastructure to underserved communities, with emphasis on rural, remote and Indigenous communities.¹⁷ Moreover, the federal government will have invested more than \$800 million by 2023 in the Connecting Canadians and Connect to Innovate programs to support infrastructure projects in underserved communities, including remote and Indigenous communities in the North.^{18 19} The federal government also announced an \$85-million investment in Canadian satellite company Telesat to develop and secure new low-Earth orbit satellites (LEO) that could increase broadband capacity in rural and remote areas.²⁰

A number of provincial governments have also announced more than \$4.7 billion in combined investment to expand internet infrastructure since 2018.^{21 22 23 24 25 26 27 28} The Ontario government alone committed nearly \$4 billion to its Ontario Connects program, an initiative to bring connectivity to reliable, high-speed internet to every region in the province by the end of 2025.²⁹ The program includes a new procurement process that will enable internet service providers to bid for provincial subsidies on infrastructure projects.³⁰ The Ontario government also recently announced a \$109-million investment in Telesat's next-generation LEO satellite network.³¹

Despite public investments and accelerating progress to close infrastructure gaps, the most remote areas in Canada—particularly the North—still lack sufficient internet infrastructure. Progress to expand infrastructure to communities that are hard to reach is a critical first step to ensure the meaningful digital inclusion of all people in Canada.

MOVING BEYOND INFRASTRUCTURE: AFFORDABILITY

The expansion of internet infrastructure initiatives across Canada masks underlying inequities concerning differences in individuals' ability to afford and connect to home internet service. Although nearly all Canadian residents (99%) live in areas with the infrastructure to connect to a basic internet service at home, still 5.3% of households in Canada do not have home internet service, and 15.5% do not have an internet connection service at the 50 Mbps download speed target. Although a greater proportion of people in Canada in locations with the infrastructure to connect to high-speed internet, continuing to build out internet infrastructure does not mean that everyone in Canada can and does subscribe to an internet service at home.

5.3% of households in Canada do not have home internet service, 15.5% do not have an internet connection service at the 50 Mbps download speed target



Even areas where internet infrastructure and quality are sufficient, affordability concerns remain in urban and rural areas alike. Almost half of households in Canada with an annual income of \$30,000 or less did not have high-speed internet in 2018.³² According to the CIUS, 26% of Canadian residents who did not have internet connectivity at home said the cost of the internet service is the reason.³³

26% of Canadian residents who did not have internet connectivity at home said the cost of the internet service is the reason

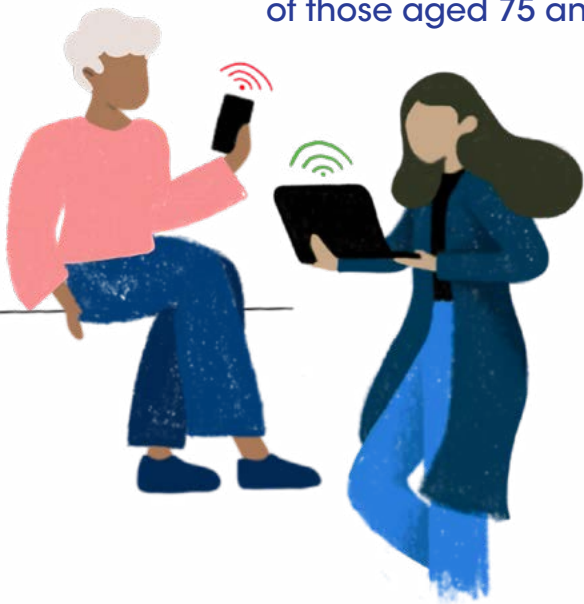


Moreover, the Survey on Employment and Skills conducted in December 2020 found that one in three Canadians say they worry a lot or some about being able to pay for a high-speed internet connection at home over the next few months.³⁴ In an international context, Canadians are more likely than Americans to express concerns about the affordability of their internet or cellphone connections.³⁵ Without home internet, individuals lack the ability to access critical services and information, including banking, healthcare and education.

The inability to connect to the internet impacts various underserved communities, even in well-developed urban cities. For example, half of Toronto's low-income households (52%) report internet download speeds below the 50 Mbps target.³⁶ Older adults and people with disabilities have also consistently reported lower home internet use and speeds across Canada and within urban centres.^{37 38}

The CIUS revealed that 99% of those aged 15 to 24 said they can connect to the internet at home, compared to only 71% of those aged 75 and over—a 28-point difference.³⁹ Moreover, 12% of people with a disability said they cannot connect to the internet at home, compared to 5% of people without a disability.⁴⁰

99% of those aged 15 to 24 said they can connect to the internet at home, compared to only 71% of those aged 75 and over



Indigenous communities also face more than just an infrastructure problem to connect to sufficient internet services. Despite private telecommunication companies receiving public funds to develop internet infrastructure in remote areas, Indigenous communities often face higher prices and lower-quality services than those in urban communities.⁴¹ According to the CIUS, among those who did not have internet at home and identified as First Nations, Métis or Inuk (Inuit), 42% said the cost of service is the reason, compared to 26% overall.⁴² Building out internet infrastructure alone will not be effective at expanding digital inclusion if marginalized communities facing systematic social inequities continue to struggle with an unequal distribution of digital services, which have become a critical element of today’s technology-driven world.

Among those who did not have internet at home and identified as First Nations, Métis or Inuk (Inuit), 42% said the cost of service is the reason, compared to 26% overall

A number of initiatives have taken steps to close affordability gaps in home internet connections. Since 2017, the federal government’s Connecting Families program has been providing \$10/month home internet service of at least 10 Mbps download speed to low-income families eligible for the maximum Canada Child Benefit. The program is subsidized by Canada’s telecommunications providers and has served over 75,000 families to date. In August 2021, the program announced an expansion to include low-income seniors and offer recipients faster internet speeds at 50/10 Mbps and 200 GB of data usage for \$20/month.⁴³

Other organizations have also implemented projects to expand internet connectivity to underserved communities. TELUS’s Internet for Good programs provide \$10/month internet to people receiving disability benefits, low-income seniors, youth aging out of the child welfare system, and students in need in Alberta and British Columbia.⁴⁴ Rogers also introduced the Connected for Success program, providing \$10/month internet to households in low-income community housing across Canada.⁴⁵ Community initiatives have also sought to identify groups that cannot afford home internet and provide them with service packages, devices, and literacy training at little or no cost.^{46 47} The expansion of public Wi-Fi hotspots also provides critical points of digital access for those completely disconnected from online spaces; there were 51,000 hotspots available across public libraries, community centres and parks in Canada in 2019, nearly all of which did not require paid access.⁴⁸

Moreover, municipal governments have developed

digital plans to expand internet connectivity to marginalized groups, and promote inclusive and equitable technology initiatives. For example, the City of Toronto's Digital Infrastructure Plan formalizes a set of principles that will guide the City's decision-making and approach to developing digital infrastructure.⁴⁹ The City of Vancouver's Digital Strategy also emphasizes the City's role in making progress among four key policy areas: improving access to digital services, devices and literacy; expanding municipal digital assets, including above-and-below ground infrastructure, software and data; driving growth in Vancouver's digital economy sector; and advancing innovation to accelerate organizational digital maturity and embed digitization across diverse industries.⁵⁰ Despite the budding potential within public libraries to bridge Canada's digital divide, home internet access continues to provide a richer and more secure online experience than accessing the internet in a public space.

THE DIGITAL DIVIDE AMID A PANDEMIC

The COVID-19 pandemic has brought to the forefront the urgency of closing Canada's digital divides. The closure of public and civic spaces, and the expansion of remote work and online delivery of critical government services during the pandemic has made equitable access to digital services more crucial than ever. According to the CIUS, over two-fifths of people in Canada aged 18 to 65 (43%) said they used the internet to work from home more often than before the pandemic, with 12% using the internet to work from home for the first time.⁵¹ The pandemic was accompanied by an increase in overall internet use; more than one-quarter (27%) of people in Canada spent 20 hours or more per week on the internet for personal use in 2020, up from 19% in 2018.⁵² During the pandemic, people in Canada most commonly used the internet to conduct online banking (75%), access online government services (74%), research information on health (69%), book appointments (48%), and take formal training or learning (24%).⁵³

Percentage of people who conducted activities for the first time during the pandemic:

12%

used the internet to work at home

11%

did online training or learning

28%

used video conferencing services to communicate with friends or family



The COVID-19 pandemic showed how the digital divide impacts both young and old alike, as working adults required the internet to work from home, and children relied on the internet to complete schoolwork. Three in five households with school-aged children were learning online at least part of the time in fall 2020,⁵⁴ and nearly all K-12 and post-secondary learning in Canada had been operating remote-only or in hybrid models.⁵⁵ Among those with children learning online, about three in ten said that it was likely that their children: a) would have to use public Wi-Fi to complete schoolwork due to a lack of reliable internet connection at home; b) would not be able to complete schoolwork because they did not have a computer at home; and c) would have to do schoolwork on a smartphone, with rates higher for low-income households, racialized individuals and Indigenous people.⁵⁶

Moreover, without the ability to connect in-person, the internet became a place where individuals engaged in activities which were previously not conducted online to the same degree. Almost two-thirds of Canadian residents (64%) used the internet to make online voice or video calls, up from 47% in 2018; and more than two-thirds used the internet to search for health information.⁵⁷ In addition, almost three in five Canadians (57%) said they used video conferencing services to

communicate with friends or family; and more than one-fifth said they used online government services more often since the start of the pandemic.⁵⁸

The upsurge in internet use for personal connection, entertainment and online services may transform the way people in Canada work, connect, and deliver services in the future, further marginalizing underserved groups. The ease and speed with which services can be accessed online has also encouraged businesses to expand the online delivery of their services. The flexibility of work-from-home measures may also encourage organizations to adopt a hybrid model of in-person and remote work on a long-term basis.

According to Statistics Canada, 80% of new teleworkers indicated that they would like to work at least half of their hours from home once the pandemic is over; and up to one quarter of work hours could remain remote even after the pandemic ends.⁵⁹

The pandemic has also shown how technological capacity increases businesses' economic resilience in crises and individuals' compliance with health regulations. A Statistics Canada study found that digitally-intensive sectors were less impacted by the pandemic than non-digitally intensive sectors. In April and May 2020, GDP declined by 18.1% and 13.8%, respectively, in the non-digitally intensive sector, compared to only 11.8% and 10.3% in the digitally intensive sector.⁶⁰ Another U.S. study of mobile devices found that unequal access to high-speed internet significantly impacts the ability of people to stay at home; and drove much of the observed income correlation with stay-at-home compliance.⁶¹ Without access to adequate digital services, marginalized communities will continue to face greater economic and health risks in times of crisis.

The pandemic also revealed that technology jobs show relatively greater resilience in crises

compared to other occupations. A report by the Brookfield Institute for Innovation + Entrepreneurship found that the initial shock of the pandemic decreased overall employment in technology by only 4.2%, and by May 2020 employment in technology jobs had fully recovered to pre-pandemic levels.⁶² Technology-based occupations allow employees to conduct work tasks in remote and flexible arrangements, rendering digital skills a critical component of our post-pandemic economic recovery where hybrid models could become normalized.

Individuals' reliance on technology for everyday life during and after the pandemic is not equally available to all people in Canada. Significant gaps in internet use among underserved groups were still prominent throughout 2020. According to the CIUS, about 38% of Canadian residents aged 75 or older, 16% of people with disabilities, 15% of those not employed, 12% of Indigenous peoples and 13% of those living outside a metropolitan area did not use the internet, compared to only 8% overall.⁶³

Who did not use the internet in 2020?



Moreover, the ability to work from home was not equally available to all people in Canada. Half of individuals aged 25 to 34 said they used the internet more often to work at home, compared to 30% of those aged 55 to 64. People with disabilities also did not transition to working online during the pandemic; only 19% of people with a disability said they increased their use of the internet to work at home—approximately 19 points lower than those without a disability.⁶⁴

The lack of a sufficient internet connection negatively impacts the ability of Indigenous people, people with disabilities, non-employed individuals and those living in rural areas to access critical online government services during the pandemic. Of those who identified as First Nations, Métis or Inuk (Inuit) in the CIUS, 32% said they did not use online government services, compared to 26% overall.⁶⁵ Moreover, approximately two in five people with disabilities (38%) said they did not use government online services—14 points higher than those without a disability.⁶⁶ Use of online government services was also lower among unemployed individuals (61%, compared to 83% of those employed), even though unemployed Canadians are more likely to need access to critical online services during a pandemic such as applying for employment insurance benefits and other economic stimulus funding.⁶⁷ Without expanding internet connectivity to underserved communities, a significant proportion of people in Canada will continue to face difficult challenges conducting basic tasks that have shifted online (including work) and greater risk of financial instability.

THE DIGITAL DIVIDE IN AN INCREASINGLY DIGITAL ECONOMY

The digitization of the economy has required the increased use of digital skills, which have become increasingly necessary in the workplace. Canada's innovation and emerging technologies sector is a critical driver of growth and productivity,⁶⁸ and its effective management and development requires a proficient digital workforce.⁶⁹ Statistics Canada found that digital intensity in the Canadian economy—the extent to which organizations have relied on digital technologies for the production of goods and services—has continuously increased over the last 15 years.⁷⁰ Digital economic activities in Canada made up 5.5% of total GDP in 2017; and jobs associated with the digital economy grew three times more (+37%) than the total economy (+8.6%) between 2010 and 2017, largely fueled by growth in the telecommunications services sector and e-commerce.⁷¹ The expansion of the digital economy is likely to continue well into the future, as labour productivity is accelerating faster within digitally intensive sectors, at an annual growth

rate of 1.4%, compared to 0.7% in non-digitally intensive industries.⁷²

For employees to be competitive in the labour market in an increasingly digital economy, digital skills have become a necessity. Using an examination of job posting data from 2012 to 2018, a report by the Brookfield Institute found that fluency in Microsoft Excel, Office, Word and PowerPoint were among the top four most frequently mentioned skills in job postings.⁷³



Fluency in Microsoft Excel, Office, Word and PowerPoint were among the top four most frequently mentioned skills in job postings

Although the most in-demand digital skills in the Canadian economy involve the ability to navigate everyday data management softwares such as the Microsoft Office Suite of programs, more digitally-intensive skills are beginning to see greater demand, including programs such as SQL, a database querying software, signalling the growing importance of data analysis expertise in the Canadian economy.⁷⁴

Large economic gains can be made from the digital inclusion and upskilling of Canada's workforce; however, the digital divide is impeding this progress. According to the Information and Communications Technology Council, a one-percent increase in labour productivity resulting from the adoption of digital technology yields an additional \$8 billion in value to the Canadian economy.⁷⁵ A technologically-skilled workforce is an invaluable asset to a digitally-fueled future economy. A report by Boston Consulting Group revealed digitally-literate small- and medium-sized enterprises create twice as many jobs and realize revenue growth 15% faster than those that use less technology.⁷⁶

As of 2018, “digitally mature businesses were 62% more likely than their peers to have enjoyed

high sales growth and 52% more likely to have more profit.”⁷⁷ Yet, research by the Brookfield Institute shows that small- and medium-sized enterprises (SMEs) in Canada still significantly lag behind larger firms in their use of social media, e-commerce, cloud computing and adoption of all types of cybersecurity—all of which are critical aspects of cost reduction and revenue growth.⁷⁸ Moreover, barriers to digital maturity are driven by SMEs’ relatively lower ability to access reliable high-speed internet.⁷⁹ For example, only 24.8% of small enterprises have fibre optic internet connection, compared to 73.1% of large enterprises.⁸⁰ Canada also lags behind other OECD countries in the number of businesses with a website or home page, and businesses using social media.⁸¹ Moreover, the Centre for the Study of Living Standards found that lower ICT investment is a critical factor driving the productivity gap between Canada and the United States, as ICT investment per worker fell nearly 5% per year in Canada from 2008-2014 relative to the United States.⁸² Lower investments in technology mean Canada’s long-term economic growth will depend on its ability to enhance digital adoption and skills across all sectors of its workforce and business operations to successfully compete with other technology-driven peer jurisdictions on the global stage.

A stronger economy will enable policymakers to use technology to reduce poverty, increase incomes, and empower citizens to provide added value to Canada’s productivity. Without the digital and technical abilities to meaningfully participate in the economy, underserved groups will continue to be left behind from work opportunities, which will further reinforce digital, financial and social inequities.

MORE THAN JUST AN INTERNET CONNECTION: ACCESS TO TECHNOLOGY DEVICES

Having an internet connection at home is the first step to providing equal access to work and online opportunities for underserved people in Canada. However, an internet connection alone is not enough to empower people to fully and

meaningfully participate online. Using the internet to work, go to school or access services requires access to technology devices, which is still not easily affordable for all people in Canada. The increasing use of two-factor authentication to set-up and access digital services, such as email and banking, also often requires a mobile device. When asked whether they had used a technology device within the last three months, 8% of respondents said they did not use any technology device, 19% did not use a smartphone, 36% did not use a laptop or notebook, and almost three in five people did not have an internet-connected smart home device.⁸³ A lack of access to technology devices was even more prominent among people with disabilities, older adults, and those who identify as First Nations, Métis or Inuk (Inuit).⁸⁴

People with a disability were approximately 2.5 times more likely to say they did not use a technology device and two times more likely to say they did not have a smartphone, compared to those without a disability.⁸⁵ Moreover, 23% of those aged 65 and older said they did not use any technology device and 22% said they did not have a smartphone—21 percentage points higher than those aged 25 to 34.⁸⁶

Access to technology devices is impacted by individuals’ ability to afford them, and is therefore correlated with income. The CIUS revealed that 14% of those without home internet say the cost of equipment needed to connect is the reason.⁸⁷ Moreover, 32% of those without a smartphone and 23% of those without an internet-connected smart home device say the cost of these devices is the reason.⁸⁸ A May 2020 survey also found that, among households with incomes under \$50,000, 6% did not have a computer and 19% did not have a smartphone, compared to just 2% and 5% of households with incomes above \$50,000.⁸⁹ Moreover, nearly one-quarter of households in the lowest income quartile reported using only mobile devices for accessing the internet, three times higher than those in the highest income quartile.⁹⁰



32% of those without a smartphone and 23% of those without an internet connected smart home device say the cost of these devices is the reason

A lack of access to devices is particularly critical for students in online schooling. The Diversity Institute's new survey found that those with children at home who identified as Indigenous (52%), racialized (36%) or low-income (33%) said it was very or somewhat likely that not having access to a computer at home impacted childrens' ability to complete schoolwork during the pandemic.⁹¹ According to the report, "those with annual household incomes below \$60,000 were twice as likely as those with household incomes of \$100,000 or more to say that their children would have to use public Wi-Fi to finish their schoolwork."

During the pandemic and the establishment of virtual learning, school boards, libraries and private providers across Canada loaned devices equipped with free wireless data plans.⁹² Many Canadian municipalities also provide free Wi-Fi hotspots to residents in need through public libraries or shelters.⁹³ School boards across Canada have also provided students in need with internet-enabled devices and internet hot-spots during school closures resulting from the pandemic.⁹⁴ While these initiatives were necessary in emergency situations such as the

pandemic, they are not long-term solutions to expanding affordable and consistent digital access to all homes in Canada.

MORE THAN JUST AN INTERNET CONNECTION: DIGITAL SKILLS AND LITERACY

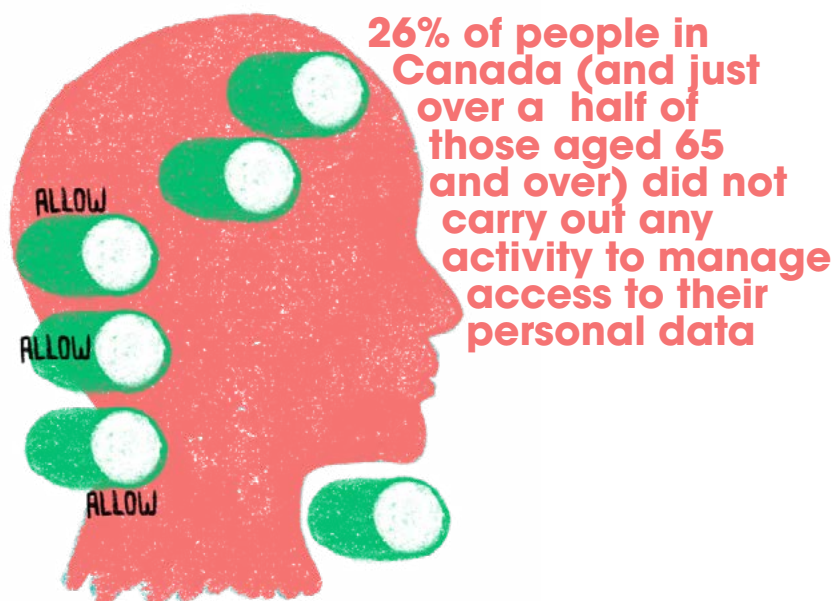
Equitable access to the internet also requires having the right digital literacy skills to effectively use technology. More than 20% of 15-year-old students in Canada report not having been taught various digital literacy and well-being skills, such as how to detect phishing or spam emails, use keywords when using a search engine, and how to evaluate trustworthiness of online information.⁹⁵ A quarter of people in Canada searching for digital literacy programs cited online security, followed by internet navigation skills and evaluating credible online sources, as their most needed priorities.⁹⁶

The pandemic has provided individuals the opportunity to pursue further technology learning online; 29% of people in Canada said they more often engaged in online training or learning compared to before the COVID-19 pandemic; and 45% said they took part in learning activities to improve skills relating to computers, software or applications through online programs, help from friends, family, or community centres.⁹⁷

However, the uptake in digital learning opportunities was not equally distributed among all people in Canada; 17% of people with a disability said they had increased online training activities since the start of the pandemic, compared to 30% of those without a disability.⁹⁸ Moreover, 19% of those who live in rural areas said they were able to take part in more online learning activities during the pandemic, compared to 31% of those who live in urban areas.⁹⁹ Although the pandemic afforded individuals the opportunity to engage in online learning to improve digital literacy and skills, the inability to access the internet or online services rendered much of this online training inaccessible to those impacted by the digital divide and who lacked the ability to connect online—the very people most likely to need digital skills training.

In addition, there is still a significant gap in digital skills among Indigenous communities. An RBC study in July 2021 found that, although Indigenous youth use digital technologies frequently, they are less confident in their digital literacy skills than non-Indigenous youth, with a 13-percentage point difference.¹⁰⁰ The study revealed that nearly two-thirds of jobs held by Indigenous workers are at risk of a “skills overhaul” as a result of advanced technologies that are transforming industries that many Indigenous communities depend on, including the skilled trades.¹⁰¹

Digital literacy also includes the ability to protect sensitive information, evaluate credible sources, and understand the complexities of how online data are stored and used. According to the CIUS, 26% of people in Canada (and just over a half of those aged 65 and over) did not carry out any activity to manage access to their personal data, such as restricting or refusing access to their geographical location; refusing to allow the use of personal data for advertising purposes; checking that websites receiving personal data are secure; and changing the privacy settings on accounts or applications to limit the visibility of profile or personal information.¹⁰² People with a disability were also less likely to say they had managed access to their personal data, with 35% saying they did not carry out any activity to restrict, refuse or assess websites’ access to sensitive information, compared to 25% of those without a disability.¹⁰³



In addition, enhancing digital skills for all people in Canada requires developing a deeper understanding of the security, privacy and cyber threats involved in online and digital activities, particularly given the extent to which technology and digital applications have permeated major aspects of our daily lives. A minority say they are extremely or very concerned about the security and privacy threats of social networking sites (27%), online shopping sites or applications (25%), and online data storage (10%)—even though more than half (58%) say they experienced a cybersecurity incident during the pandemic.¹⁰⁴



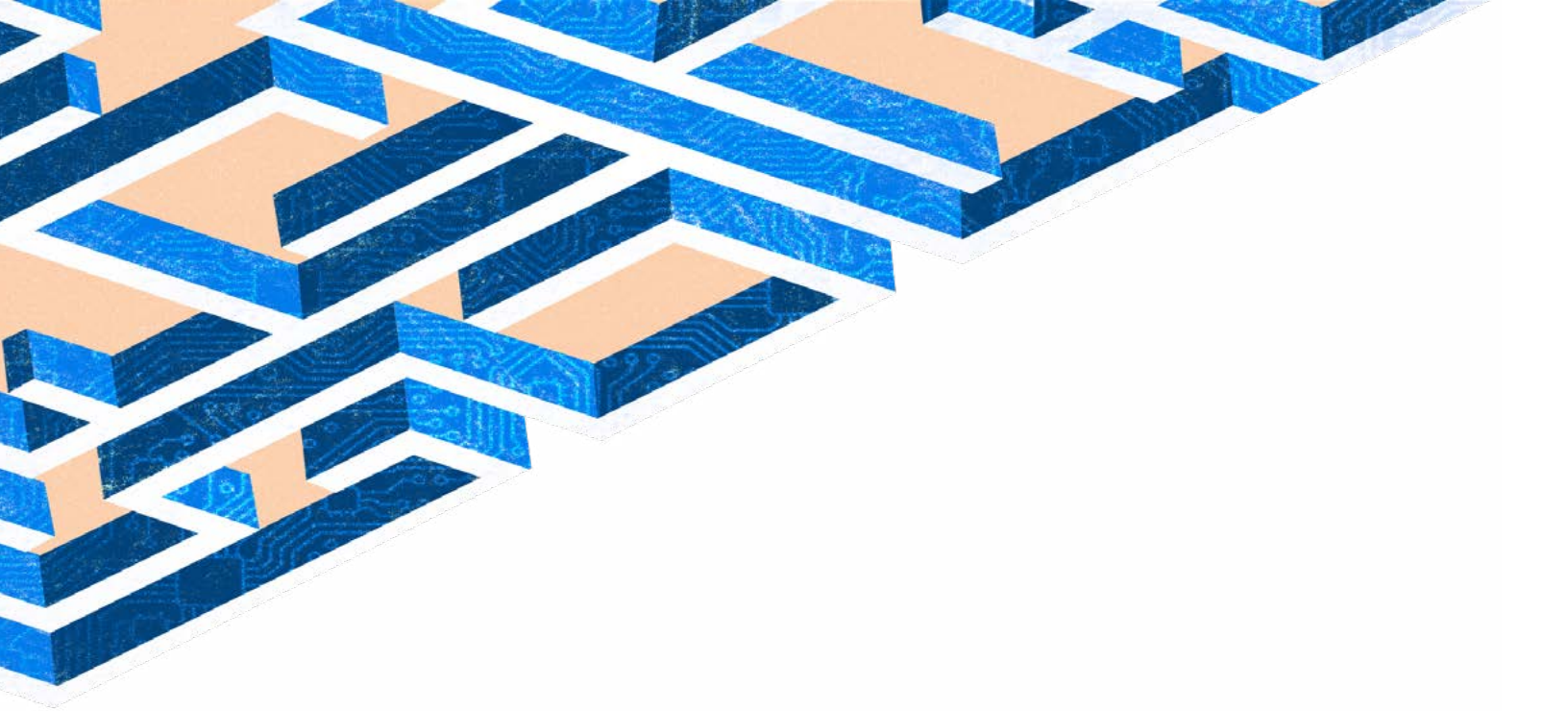
Following a cybersecurity incident, 39% of Canadians said they did not take any action to prevent this in the future

Furthermore, following a cybersecurity incident, 39% said they did not take any action to prevent this in the future such as reporting the incident to the company through which the incident occurred or a governmental authority; installing, upgrading or subscribing to protection software; beginning to carefully read terms and conditions related to subscriptions and applications; changing passwords more frequently; deleting accounts associated with the security incident; or changing credit or debit card numbers associated with the

incident.¹⁰⁵ More work needs to be done to raise awareness on the risks of online harm in Canada, and the steps needed to protect the privacy and security of personal data, particularly as cyber threats continue to grow in tandem with society's increased reliance on the online delivery of critical services.

In 2017, the Government of Canada invested \$29.5 million in the Digital Literacy Exchange Program to support organizations in implementing digital literacy initiatives at public libraries, housing complexes and senior homes that will help Canadians develop the necessary skills to engage with mobile devices, computers and the internet safely.¹⁰⁶ Although the number of digital literacy training programs targeting youth and older adults has seen some recent growth, experts have voiced concerns over the “fragmented” and “confusing” landscape of digital programming in Canada.¹⁰⁷ With little coordination between jurisdictions and programs, non-formal digital training programs outside the scope of the K-12 or post-secondary education system are an “open marketplace” for those who have the disposable income to pay for program fees.¹⁰⁸ However, low-income individuals may continue to face difficulties accessing formal digital education or non-formal paid programs, feeding a cycle of perpetuating inequities as those with the ability to afford digital learning continue to accrue competitive skills in the labour market while others in need of foundational training are left behind.¹⁰⁹

Digital literacy education has become an increasingly important part of K-12 education curricula. British Columbia, Nova Scotia, New Brunswick and Ontario have all introduced coding as a formal component of school curricula to enable students to learn how to build websites and games.¹¹⁰ Many schools across Canada also partner with third-party organizations to deliver extra curricular coding opportunities for interested students.¹¹¹ Provinces and territories have also sought ways to infuse technology learning in all aspects of schooling, including developing the critical thinking skills necessary to safely use technology tools in a variety of educational and work settings.¹¹² For example, the Yukon Education



Digital Literacy Framework presents guidelines for educators on the skills students need to achieve digital competence, including the ability to develop digital software from scratch; use digital tools to solve complex problems; identify which technologies are best suited to efficiently complete different types of real-world tasks; and analyze the limitations and risks associated with technical innovation.¹¹³

The Brookfield Institute also developed the Digital Literacy + Coding Pilot program—an educational curriculum focused on introducing youth to hands-on coding with HTML and CSS—as an entryway to developing more advanced skills in computational thinking.¹¹⁴ Throughout the testing of the program, the Brookfield Institute identified a set of critical components for the effective delivery of digital learning programs, including: ensuring programs are affordable to youth from all socio-economic groups; creating a safe environment for students to learn; designing curriculum activities with accessibility in mind; developing a clear and consistent structure of program delivery, relying on instructors and staff who understand the cultural context of local communities; and enforcing a comprehensive monitoring and evaluation framework to identify weaknesses and fill gaps in the delivery of learning in the long term.¹¹⁵

The successful delivery of digital skills programming will require more than just additional funding to community organizations and public libraries engaged in digital training. These organizations also need the resources to advance tuition-free programs for low-income individuals; develop the physical infrastructure needed to accommodate larger numbers of students in an inviting and safe space; secure sufficient internet connectivity; improve access to advanced technology devices; and attract the right teaching talent by offering competitive and attractive wages to well-qualified instructors.¹¹⁶

With all the nuances and intricacies of the digital divide in mind, our six Overcoming Digital Divides workshops sought to accelerate the regulatory, policy and programmatic solutions needed to overcome Canada’s persistent digital inequities. The following is a summary of key takeaways from discussions with policymakers, industry, researchers and civic institutions.

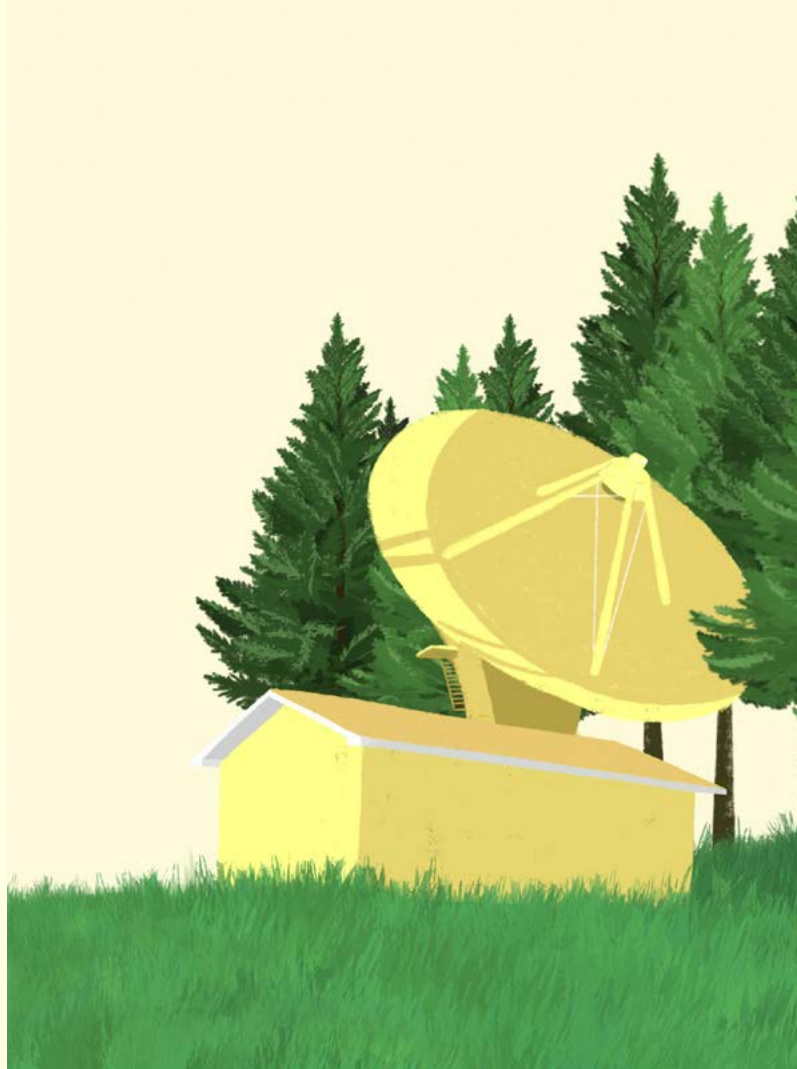
PART 1: INDIGENOUS, REMOTE AND RURAL COMMUNITIES

Key Takeaways:

- More investment is needed from governments and industry, as well as greater coordination with Indigenous communities, to address the critical digital infrastructure gaps that still persist in Canada's remote communities.
- Piecemeal approaches to expanding digital infrastructure are not transforming Canada's market-driven telecommunications system fast enough to address connectivity gaps for remote communities.
- Digital upskilling for Indigenous people, and a concrete commitment to Indigenous ownership and control of their data, is a critical part of expanding meaningful digital inclusion to Indigenous communities.

CANADA'S PROFIT-DRIVEN TELECOMMUNICATIONS MARKET

Expert guests who spoke at the series acknowledged that recent and new investments from telecommunications companies and governments have sought to connect more rural and Indigenous communities to high-speed internet, but progress is a challenge in too many of Canada's remote communities. In particular, participants highlighted Canada's profit-driven market model as a significant impediment to fully connecting remote and Indigenous communities. They outlined how returns on investment for initiatives that expand internet infrastructure to remote areas with low population densities are not enough to incentivize service providers to take on transformative infrastructure projects. Speakers noted that profit is an inaccurate indicator of what Indigenous communities desperately need for internet access.



Last mile connectivity refers to the final part of internet infrastructure networks that physically connects the main backbone of the telecommunication system directly to the end-users, in many cases their individual homes.

Persisting infrastructure gaps place a greater burden on government initiatives to compensate for inadequate digital infrastructure investment from the private sector. A government representative from British Columbia said the influx of public funds from the federal government's Universal Broadband Fund and provincial initiatives has enabled projects to expand internet connectivity to remote communities at a faster rate. Other participants noted that, while these initiatives are in the right direction, many projects are still in progress, are poorly coordinated, do not always address last

mile connectivity, and give undue consideration to costs and profits rather than the projects' real long-term connectivity value. Participants were also concerned that public funds focus too heavily on public-private partnerships, with little room for community or municipal networks to correct the power imbalances enjoyed by the largest players in Canada's telecommunications market.

INCLUSION OF INDIGENOUS EXPERTISE AND UPSKILLING

The meaningful inclusion of Indigenous voices as equal and knowledgeable partners capable of determining their own vision and managing their own community infrastructure is an important component of digital inclusion. Ensuring that all Indigenous people meaningfully participate in Canada's digital economy and access essential services involves running upskilling programs that close gaps in digital skills for Indigenous people in underserved areas. Moreover, Indigenous expertise on technology issues should take a more active and prominent role in government and industry consultations on Canada's digital infrastructure—from organizations such as the First Nations Technology Council, which has spent years advocating for the creation of advanced community infrastructure networks, as well as how state-of-the-art technologies can be implemented and used in Indigenous communities.

Indigenous peoples' own lived experiences also painted an important picture for policymakers and service providers to understand. A resident of Lac Seul First Nation in Ontario shared her experiences with inadequate digital access in remote Indigenous communities, describing having to drive through underdeveloped roads without any signage, and undertake multiple jobs at once to provide basic educational programming for Indigenous students with minimal access to technology or devices.

Moreover, Indigenous representatives highlighted that Indigenous communities face disadvantages with respect to accessing public funds to invest in expanding remote community networks. For example, participants stressed that, in many cases,

Indigenous groups that are in desperate need of digital infrastructure investment can spend an inordinate amount of time working on funding applications, only to be rejected because they do not meet the standards of other requests written by experts and trained consultants from better-served communities. Participants underscored that public investments to expand internet access to rural communities will not reach their full potential if smaller service providers and Indigenous communities cannot access or qualify for these funds to undertake community-based projects.

The federal and provincial governments should make funding more easily accessible for small service providers by simplifying the application process and ensuring fair consideration of both the operators' capacity and community preferences for the types of networks to be deployed. The government can also incentivize and reward projects that are based on partnerships between large and small-to-medium sized internet service providers to increase competition and expand community networks' access to the market, particularly for Indigenous and remote communities.

THREE-LEVEL COORDINATION OF PARTNERSHIPS: PUBLIC, PRIVATE AND COMMUNITIES

Providing sufficient access to quality internet in Indigenous communities requires high-level coordination between public, private and Indigenous stakeholders. Participants agreed that a robust and coordinated policy and regulatory framework that ensures equal and affordable internet connectivity for Indigenous people, and integrates technology-informed, trained Indigenous expertise, is still missing in our national broadband strategy. Participants noted that Canada's ability to expand internet access is contingent on the ability of: a) public initiatives to create an enabling environment that fosters competition between service providers; b) industry to successfully adapt to new technologies at affordable prices; and c) local communities to understand how this new technology can be used or complement existing

services. Moreover, participants agreed that the complexity of addressing connectivity in a vast and geographically diverse country such as Canada requires thinking about how a multi-jurisdictional approach to connectivity can take place: large and small service providers alike must develop initiatives with an eye to empowering and catering to the needs of their host communities.

Moreover, government initiatives and large-scale investments in internet infrastructure have taken a piecemeal, ad hoc approach to expanding internet access. Without developing a comprehensive database and deeper understanding of which specific communities across Canada (those around urban centres and throughout the North) lack sufficient connectivity, infrastructure initiatives will not make significant strides in expanding digital access to underserved communities still left in the dark; and stakeholders will not be able to accurately evaluate how much progress has been made, which areas are still without access, and how long it would take to connect all communities in Canada. Developing relationships between community organizations intimately familiar with groups in need, and coordinating these relationships with all levels of government to ensure policymakers are well-informed and specifically aware of where digital gaps geographically exist, is an important step to expanding digital infrastructure to those who need it most.

DATA SOVEREIGNTY

Meaningful transformative strategies to expand internet access also requires that Indigenous communities have control and use of their own data. The workshop emphasized that data sovereignty is a key priority for Indigenous people looking to create and use networks that accurately reflect their communities' unique needs, purposes and vision. Participants noted that policy discussions overlook how data from Indigenous communities will be used and commodified, with stakeholders prioritizing the need to build digital infrastructure as quickly as possible.

Much of the frustration expressed at the workshop came from participants who noted that Indigenous communities' information is often given to the government for other purposes than building self-determined, sovereign Indigenous nations that can control the actual impact of these technologies.



POLICY RECOMMENDATIONS:

- Invest in research that more granularly identifies specific communities facing gaps in internet infrastructure in Canada's most remote areas, with particular emphasis on communities in the North. An evidence-informed approach that effectively directs public investments to underserved areas should focus on precisely locating households that do not have home internet due to insufficient infrastructure, developing open access mapping data, and more deeply understanding the unique infrastructure needs of different Canadian geographies.
- Enhance cooperation between the private, public and community sectors by building open and clear communication networks, as well as ensuring public investments can support community-based and owned infrastructure—with particular emphasis on working with Indigenous communities on developing last mile connectivity.
- Enhance technological capacity-building for Indigenous communities by implementing upskilling programs, consulting with Indigenous leaders and stakeholders, tailoring infrastructure developments to unique Indigenous needs, and upholding a real commitment to Indigenous ownership and control of data and technology.

“From an Indigenous perspective, the use and commodification of our data is a serious issue that does not get enough attention. While we all rush to build these networks, I want us to be wise in how we understand who and what is designing these networks and virtual worlds, and for what purposes. I believe that Indigenous peoples and those marginalized and excluded from these conversations could radically change how we use technology and how that will impact seven generations ahead. We must not just focus on getting the fastest connection possible as quickly as possible; we must also take the time to have a vision for these technologies and determine how we want them to integrate into our communities and lives.”

—**Denise Williams**, CEO, First Nations Technology Council

“There are multiple projects that are required in order to get connectivity to communities. There's a last mile, there's being able to do the community-based infrastructure, there is transport to bring capacity into that community and that needs to be coordinated not just across projects, but between service providers as well. We're starting to see progress for the past couple of years, but there's a lot more work that needs to be done on the ground, versus just infrastructure projects.”

—**Susan Stanford**, Assistant Deputy Minister, Connectivity, Ministry of Citizens' Services, BC Government

PART 2: LOW-INCOME COMMUNITIES

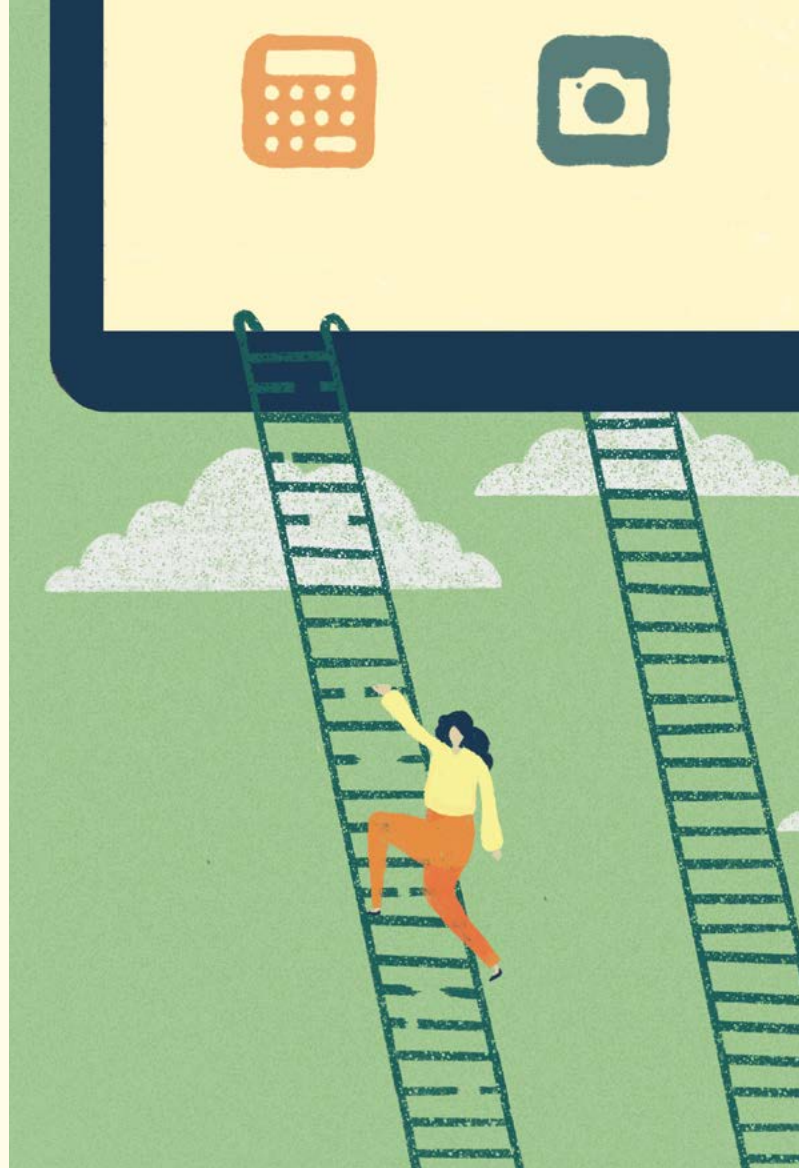
Key Takeaways:

- If only market-priced internet plans are available, many low-income individuals will not be able to afford an adequate internet connection to access critical health, social and employment opportunities.
- Current initiatives that provide home internet services at a discounted price are an important first step, but strict eligibility criteria still exclude a large proportion of low-income individuals in Canada.
- Making internet services more affordable on a large-scale requires advancing a regulatory strategy that considers community-based network solutions and fosters increased market competition across Canada.

CORRECTING AFFORDABILITY MYTHS: ACCESS TO THE INTERNET IS NOT A CHOICE

Participants clarified some common misconceptions about low-income people's use of technology. They highlighted that low-income individuals do not intentionally choose to settle for a sub-optimal internet connection that does not meet their needs if they can afford it. Recognizing that individuals' inability to have internet service at sufficient speeds is not a choice, participants argued that Canada's digital strategy should prioritize the digital divide as an urgent, systemic concern that is unfairly depriving a large portion of Canadian residents of an essential service in an increasingly digitized world.

A community representative recounted working with community members in British Columbia who still heavily rely on public Wi-Fi and inadequate mobile connections to conduct basic tasks, such as booking medical appointments, accessing banking services, and filling out government forms. Moreover, the representative noted that families that become ineligible for internet assistance



programs are left without any connection, forcing them to consider dropping out of post-secondary education. Participants agreed that having a sufficient internet connection is not a choice for those compelled to make difficult trade-offs between accessing the internet, continuing their education or taking care of their health amid a pandemic that is limiting in-person services.

INITIATIVES PROVIDING INTERNET SERVICES AT A DISCOUNTED PRICE

Participants were hopeful but not fully convinced of initiatives that provide internet services at a discounted price to low-income individuals who would not have otherwise afforded it. A representative of the Connecting Families initiative (a federal program that provides internet services at \$10/month for low-income families with children) said that independent evaluators following up with

the program’s beneficiaries found that low-income individuals generally appreciate the discounted price, as it allows them to make fewer difficult trade-offs between telecommunication services and other necessities; and about 15% became new internet subscribers on the \$10 plan after having no internet access at all prior to joining the program.

However, participants were critical of the fact that discounted internet price programs operate based on stringent eligibility criteria that exclude a large portion of low-income individuals in Canada, as well as generally offer sub-optimal speeds. Participants expressed concern that there are still millions of low-income individuals in Canada who may need the program and cannot access it because they do not meet the precise requirements to be eligible (such as receiving the maximum Canada Child Benefit). Moreover, some corporate initiatives target specific groups (such as those receiving disability assistance or living in community housing), leaving out those on regular income assistance who also need the internet to search for jobs.

RAISING THE BAR: SETTING AMBITIOUS TARGETS FOR AFFORDABLE INTERNET IN CANADA

Participants emphasized that Canada’s piecemeal approach to expanding internet connectivity lacks the national strategic vision necessary to ensure that all low-income individuals in Canada can obtain a home internet connection. Ensuring that high-speed internet is affordable requires setting ambitious targets for home internet connections or adoption, not just the availability of internet infrastructure. Some participants also recommended that public initiatives subsidize \$10/

month internet for all individuals that fall below the Market Basket Measure (MBM) poverty line¹ and for all those accessing education.

Participants underlined how community-owned broadband networks across Canada allow communities to design networks that respond to their unique needs and deliver services at cheaper prices without having to focus on the bottom line. For example, the rural community of Olds, Alberta operates a community-owned fibre network that delivers high-speed internet connections for residents;¹¹⁷ and Sandy, Oregon also successfully developed a publicly-owned internet network that provides reliable internet at significantly more affordable prices.¹¹⁸

1 The Market Basket Measure (MBM) is Canada’s official poverty line and refers to “a measure of low income which is based on the cost of a basket of goods and services that individuals and families require to meet their basic needs and achieve a modest standard of living.” When individuals are unable to afford the basket of needs, they are considered to live below the poverty line.



POLICY RECOMMENDATIONS:

- Expand the eligibility of affordability initiatives that subsidize the provision of internet services to include all individuals below the MBM poverty line and offer at least 50/10 Mbps speed, and support targeted outreach to low-income communities, in collaboration with community organizations and service delivery partners, to raise awareness about the availability of these offerings.
- Create another set of federal connectivity targets that focus on outcome measures of the number of Canadian residents connected to sufficient internet services, in addition to the federal government's goal to expand adequate internet infrastructure to 95% of households by 2026.
- Empower, facilitate and subsidize the deployment of community-based and owned networks in under-served communities, and increase competition in the telecommunications market.

“Canada’s current approach is to focus on access to an internet connection, and hopefully that deals with the affordability problems later on. Overall, that means that we might be creating affordability problems in our attempt to fix our access problem, if we don’t consider how the two interact. And fundamentally, I believe this happens because we have a patchwork system that hopes to tackle the problem in bits and pieces, but we lack a national cohesive plan from our federal government that addresses internet access and affordability in tandem, at the system’s level.”

—**Erin Knight**, Access Campaigns Lead and Digital Rights Campaigner, OpenMedia

“We can no longer separate internet access, speed and availability from access to education. Access to education is a right that we must protect in a pandemic—and, yet, so many were unable to continue their education, including ESL adult education that is essential for skill-building, especially for newcomers. The Poverty Reduction Coalition is advocating for the provincial government to step in, alongside federal funding as well, to ensure \$10/month internet access for anybody accessing education in British Columbia. We’re also looking at other innovations, such as building all non-profit B.C. housing with \$10/month internet access built in.”

—**Viveca Ellis**, Interim Community Organizer, BC Poverty Reduction Coalition

PART 3: OLDER ADULTS AND DIGITAL LITERACY

Key Takeaways:

- Older adults show increased interest in digital technologies when they perceive them to be beneficial to their everyday lives; and continue their use following positive first-time digital experiences in community organizations that offer technical support and guidance.
- A lack of coordination among government, community and grassroots organizations hinders the reach of digital literacy programs tailored for older adults, particularly those with more substantial digital assistance needs, such as those with functional disabilities and sensory impairments.
- The effective digital inclusion of older adults depends on digital literacy programs' ability to address older adults' unique digital needs; the creation of a smooth user experience; and alleviating the negative impacts of ageism, which have deterred some older adults from testing new technologies.

OLDER ADULTS' INTEREST IN DIGITAL SKILLS AND LITERACY

Participants highlighted that, for older adults requiring assistance amid an isolating pandemic, access to supportive technologies and online resources is nothing short of an essential need. Contrary to stereotypical assumptions about older adults' disinterest in digital and online spaces, researchers who spoke at the workshop found that almost all residents of a community housing institution in Toronto adopted internet services at home after they first engaged with online applications at the facility. Participants also revealed that their domestic and personal routines became more efficient and organized after obtaining a home internet connection. Researchers explained that, once older adults became comfortable with operating in online spaces, they



became more interested in improving their digital skills and literacy than is traditionally assumed.

BARRIERS FACING OLDER ADULTS' ACCESS TO TECHNOLOGY AND DIGITAL RESOURCES

Researchers highlighted that difficulties accessing online resources among older adults relates to three primary issues: having 1) an internet connection at sufficient speed; 2) the necessary quality equipment to be able to connect; and 3) the digital literacy skills required for easy navigation and protection of online safety.

A number of organizations and grassroots initiatives are working to address these three concerns. However, participants noted that the insufficient coordination between community supports, front-line workers and personal support

staff has led to inadequate initiatives that lack the intersectoral collaboration necessary to effectively address older adults' multifaceted digital challenges. With many organizations working in silos to address the same problem, a significant proportion of older adults are not aware of the digital assistance programs available to them. Moreover, participants noted that, without consistent funding, volunteer and project-based work is often disrupted by lack of funds, preventing much-needed assistance from reaching vulnerable older adults.

Researchers at the workshop also outlined other barriers facing older adults beyond just a lack of high-speed internet. Functional disabilities, including sensory and cognitive impairments, also prevent a significant proportion of older adults from effectively using technological or digital tools, even when an internet connection and devices are available. For example, researchers shared that older adults prefer to use tablet devices rather than phones due to better accessibility options on tablets, such as the use of large touchscreens and ability to increase font size. Participants also underlined the critical work of front-line health workers, personal support staff and public library staff, who are often required to help older adults set up their devices and connection, particularly during the pandemic lockdowns when residents of long-term care facilities were isolated in their individual rooms without any social interaction or access to family.

DEVELOPING PROGRAMS THAT SPECIFICALLY TARGET OLDER ADULT NEEDS

Changing Perspectives

Participants referred to older adults as a “target-based learning group”, meaning they engage with technology and seek to improve their digital skills *if* they believe this is beneficial or relevant to their everyday lives. They said that digital literacy programs can effectively attract older adult participation if they explicitly take into consideration the specific needs and motivations of this unique group. For example, participants

noted that older adults generally look for programs that explain the language of technology and how to protect their safety online. Moreover, the researchers noted that adults are less likely to organize finances online or trust digital banking services, and may therefore not feel comfortable to use low-income assistance programs that require the disclosure of sensitive financial information.

User Experience

A community library representative noted that participant-led projects allow older adults to select the kinds of activities they're interested in pursuing, thereby empowering older adults to take charge of their digital development, and accommodating for each cohort's unique interests and varied abilities. With the majority of web design and technology development undertaken by younger people, researchers agreed that older adults should be adequately consulted about how best these programs can address their needs, particularly considering the varying levels of digital competency of internet users. Participants noted that older adults are easily frustrated if online programs are not straightforward or if the user experience design does not enable quick navigation.

Ageism

Participants also highlighted that older adults facing ageism are often scared and anxious to operate devices without prior experience or support. New technologies and online spaces can also be presented and advertised in ways that generally exclude older adults. They advocated for programs that use technology tools to expand older adults' creativity and communication skills, and allow older adults to view technology and the internet as integral parts of their self-expression and personal development.

POLICY RECOMMENDATIONS:

- Develop a cross-sectoral network of public, private and grassroots initiatives to increase coordination between organizations focused on enhancing older adults' access to technology devices and digital skills programming, including actively bringing programs to older adults' spaces such as retirement and long-term homes.
- Raise awareness about and address the negative impacts of ageism and stereotypical views of older adults' lack of interest or ability to engage technologically, which can discourage older adults from adopting new technologies. When devices are used to offer a service, public and government spaces should accommodate older adults' technology needs by making it a standard to present text at sufficient sizes and installing large enough screens.
- Transition first-time testers into long-term technology users by tailoring digital skills programming to older adults' unique needs, such as how to navigate critical programs and protect online safety.

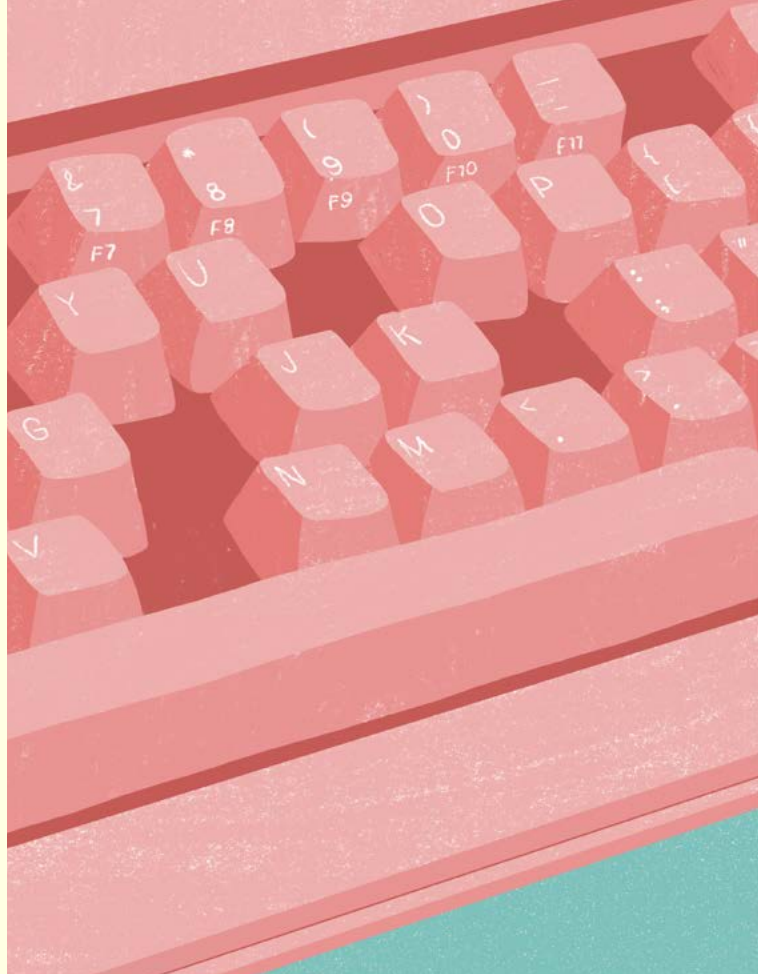
“We asked seniors what has your experience been like since the COVID lockdown in isolation in terms of digital access. We found that there were several issues involved. Access to high-speed internet of courses is one, but it didn't stop there. Devices were important: we found that seniors have difficulty reading and seeing phones and utilizing them to their optimum ability. The setup and delivery of devices to seniors who are in isolation was an enormous barrier. Seniors weren't even aware of things like the Toronto Library hotspot program, even though many agencies are working very hard to create those programs—they're working in silos. Every senior, family member and even healthcare workers that we interviewed had no idea about the free Toronto Wi-Fi hotspot program and devices.”

—**Caroline Grammer**, Professor at Seneca College in the Faculty of Applied Arts and Sciences, Department of Community Services

PART 4: PEOPLE WITH DISABILITIES

Key Takeaways:

- People with disabilities continue to face difficulties accessing and navigating online spaces. Participants called on governments to update Canada's legal frameworks to include greater enforcement of accessibility standards, and provide actionable mechanisms on how to implement inclusive design approaches in all private and public sector organizations.
- People with disabilities from low-income communities face compounded difficulties accessing online spaces, which can offer a much-needed sense of community and critical mental health support for vulnerable groups.



FEDERAL GOVERNMENT INITIATIVES

Canada's Minister of Digital Government highlighted the progress made by the federal government's initiatives to advance the accessibility of government-run digital services. For example, the Accessible Technology Program is a five-year initiative that co-funds assistive and adaptive technologies to help people with disabilities fully participate in the workplace. The program has funded wearable technologies for visually impaired individuals to access digital content in various formats, as well as software that enables users to control their computers using head movements, and a standard webcam without the need to wear any equipment or face markers using low-cost braille readers. Shared Services Canada has also created an Accessibility, Accommodation and Adaptive Computer Technology Program that helps government departments design, procure and test solutions for better compliance with digital accessibility requirements and provides workplace accommodations for public service employees with disabilities.

MODERNIZING CANADA'S ACCESSIBILITY LAWS

Participants highlighted that, although the federal government requires federally-regulated organizations to identify, remove and prevent barriers in information and communications technology under the *Accessible Canada Act*, Canada's legal frameworks have been ineffective at creating real change in digital spaces. A legal expert who spoke at the workshop emphasized that Canada still needs a strong federally-mandated information and communication standard that can enforce specific accessibility requirements on organizations. The longer the federal government waits, the harder it will be to improve accessibility, as barriers continue to pile and harden within our current infrastructure. He also pointed out that fines under Ontario's *Accessibility for Ontarians with Disabilities Act* are rare, and regulators do not conduct sufficient on-site inspections. Unless such strong requirements are enacted, participants agreed that organizations will

continue to circumvent accessibility requirements if they are not effectively enforced.

A digital industry representative said government incentives that encourage inclusive design solutions within the private sector are not sufficient. He noted that relying on imprecise appeals that highlight the market benefits of accessibility (such as better user acquisition or the ability to advertise services as being accessible) are not enough to ensure service providers in Canada abide by sufficient accessibility standards. Participants agreed that clear and regularly enforced accessibility standards will oblige private sector companies to adapt and comply—over time, positioning accessibility as an accepted norm among digital service providers.

ACCESSIBILITY TRAINING

Participants highlighted that adopting accessibility standards requires upskilling workers in many industries to develop and implement inclusive digital design solutions. In addition, they identified gaps in student training, such as the lack of accessibility training in core technology and computer science curricula. While certifications and specialized training for accessibility skills may be a step in the right direction, some participants argued that the creation of an accessibility-centred approach to digital services begins with educating

all industries and workers (not just IT departments) about the ethics of technology and the unintended consequences of innovation—such as the creation of inadvertent barriers to access for people with disabilities. Participants called on the private and public sector to not delegate accessibility enforcement to a few specialists in order to avoid lawsuits and complaints, and instead incorporate the lived experiences of people with disabilities as a meaningful part of their organization.

THE INTERSECTIONALITY OF ACCESSIBILITY ISSUES

Moreover, participants underlined the fact that not all people with disabilities have the same needs. Low-income people with disabilities face compounded barriers: not only may it be physically difficult to use certain digital services, but access to and adoption of a sufficient internet connection at the market price is often more difficult. Participants also noted that the internet is a place that provides a sense of community and mental health support for people with disabilities. A community representative emphasized that Canada's workplaces still do not take into consideration the diverse needs of people with disabilities, nor do they conduct targeted outreach for those who would not otherwise have access to barrier-free opportunities.

POLICY RECOMMENDATIONS:

- Strengthen government accessibility standards with concrete, targeted and actionable requirements to remove accessibility barriers and initiate greater enforcement mechanisms.
- Improve compliance with accessibility standards by making the provision of government funding for digital infrastructure projects conditional on the removal of accessibility barriers by the funding recipient.
- Transition from presenting accessibility guidelines to mandating the implementation of accessibility standards and inclusive design approaches for public institutions, services, training and infrastructure.

“From the community perspective, online access, which includes social media, gaming and other online pastimes, are a bridge for people with disabilities. It’s a way for people with disabilities to find community, share their voice, tackle isolation, help with mental health, find support, and even for some find their diagnosis. It’s really important that there is that reliable internet that is affordable and for a lot of our members they can’t afford this. They can’t afford the internet because they’re on disability. Igeoma Oluo said: ‘We should not have a society where the value of marginalized people is determined by how well they can scale often impossible obstacles that others will never know.’”

—**Heather McCain**, Executive Director, Creating Accessible Neighbourhoods (CAN)

“We have to understand that we’re starting with a world out there that does not know, for the most part, about digital accessibility. The people who create the digital infrastructure are barrier creators, with new generations of barrier creators being created by the universities and colleges every year. Instead of creating new generations of barrier creators, Canada needs a targeted strategy of trying to develop our IT sector to include expertise in accessible design. We could be marketing that skill, around the world to companies who need it.”

—**David Lepofsky**, Visiting Professor of Disability Rights and Legal Education, Osgoode Hall Law School

PART 5: PUBLIC INTERNET ACCESS

Key Takeaways:

- For those without home internet during the pandemic, public libraries and Wi-Fi hotspots became a critical point of online access, but these individuals were completely disconnected when libraries were closed during lockdowns.
- Public libraries provide a rich collection of digital literacy and skills programming for underserved communities, as well as access to technology devices, such as computers and printers.
- Municipal governments have a critical role to play with respect to expanding public internet access. Once implemented, the City of Toronto's ConnectTO program could offer potential guidance to other municipalities across Canada on how to leverage city-owned assets to expand connectivity to those most in need and increase competition.

THE CRITICAL ROLE OF PUBLIC LIBRARIES IN DIGITAL ACCESS

Participants emphasized the extent to which the pandemic brought to light the critical role of public libraries in providing a range of services that are essential to people's daily lives. Representatives from Canada's public libraries highlighted that many low-income individuals, those living in community shelters, and newcomers learning English depend on public libraries to access government services, enjoy digital entertainment, and connect with family and friends. For example, representatives shared that many of those who were disconnected due to library shutdowns during the pandemic could not access their email messages and described seeing people stand outside the library desperately trying to connect to the library's public Wi-Fi.

Participants added that many people also rely on public libraries to access digital devices needed to connect to the internet, complete applications



and fill out online forms, such as computers or printers. Libraries also serve ESL learners through touchscreen devices that can facilitate the use of keyboards in different languages. Moreover, participants noted that the transition to virtual setups during the pandemic motivated previously disconnected individuals to learn more about the library's digital services (such as e-books and multimedia entertainment) and how to navigate library devices—developing a new group of committed and enthusiastic digital learners, especially among older adults.

Participants pointed out that the closure of many libraries during the pandemic put those who rely on them for digital access at a greater risk of isolation, and revealed how our digital equity solutions have not sufficiently focused on providing home internet to ensure that individuals are never disconnected. They emphasized that increased home internet access will reduce pressure on public libraries, reserving library devices for those who need them the most.

PUBLIC INTERNET HOTSPOTS: PROTECTING USERS' PRIVACY AND SAFETY

Participants reflected on how municipalities across Canada have expanded public Wi-Fi services to more government buildings, town centres and recreational facilities. A representative from Île Sans Fil, a non-profit community wireless network that coordinates free public wireless internet access through hotspots across Montreal, said the organization has expanded access to the internet to major cafes, hospitals and community centres over the past 18 years. As an example of a community-focused public Wi-Fi organization, Île Sans Fil targeted civic, environmental and cultural community spaces to allow marginalized and vulnerable groups to stay informed about current events and engage in the political process.

However, participants acknowledged the potential risks of public Wi-Fi to users' privacy and safety, particularly for vulnerable groups such as children. Library representatives noted that, although computers for children have some content restrictions, many libraries do not provide content filtering on most of their public computers to protect intellectual freedom. A Toronto Public Library representative said the library protects the privacy of users by providing access to the Tor Browser, a free and open-source software that enables anonymous communication without revealing a user's location or internet usage. Participants emphasized that libraries must take seriously their commitment to uphold data protection and security measures, and ensure non-discrimination of content and algorithms, as well as run digital safety programs to raise awareness among library users on the risks of public internet.

THE ROLE OF MUNICIPAL INTERNET: THE CITY OF TORONTO'S BROADBAND PLAN

Following lessons learned about gaps in digital access brought to light by the pandemic, the City of Toronto committed to building a public digital infrastructure plan on the principles of equity and inclusion. Representatives from the City who

joined the workshop outlined the ConnectTO program's plan to create a municipally-owned broadband network using the City's fibre assets, buildings, lights, sidewalks and boulevards to deliver connectivity to underserved areas. In partnership with private sector service providers, the City plans to facilitate internet plans at lower prices that can generate savings for the City that will be re-invested into expanding digital access for vulnerable groups.

Participants expressed their initial support of the City's program, particularly the program's emphasis on positioning connectivity as an integrated priority in all the City's physical and digital planning. Participants also emphasized that the creation of social policies that encapsulate the nuances of each city's digital divide challenges by relying on evidence-informed consultations with researchers, community representatives, data scientists and other peer countries is an important first step to overcoming Canada's digital divides. They noted that municipal ownership of digital infrastructure assets will help the City control where connectivity flows, and identify private sector partners that are best fit to realize the City's vision of equitable and affordable digital access. Although the City's plan is centred on well-received principles, the implementation of those commitments is yet to be seen.



POLICY RECOMMENDATIONS:

- Incorporate access to digital service as a cornerstone of municipal planning by embedding internet connectivity in the design and planning phases of development and municipal services.
- Increase investment in digital library services that expand the number of devices available to library users (such as computers, touchscreens and printers); and enhance public libraries' digital literacy programs focused on providing free digital skills training to marginalized and vulnerable groups.
- Leverage municipally-owned assets to build public internet infrastructure that can provide affordable internet for people at all income levels and increase competition.

“We saw during COVID the number of people who haven’t been motivated to learn how to use a computer or learn how to use digital devices till now. We’ve seen some incredible learning happening among seniors who just didn’t have a reason to take on learning ebooks or Netflix up until the point when libraries were closed and they couldn’t access books in print. They are now motivated to learn all these new skills and we were so pleased to be there for them to help them through these steps. A senior shared with us recently that she and her husband, who are both in their 70s, had never learned to use ebooks or streaming video before, but had taken this on for the first time during the pandemic, and had been walked through all the steps by our digital team and are now enthusiastic learners completely committed.”

—**Christina de Castell**, Chief Librarian and CEO, Vancouver Public Library

“We need to continue to support public libraries, and recognize them as the core public and social infrastructure that are investing in technology needs. That requires sustained and continued support. There are more public libraries in Canada than Tim Hortons, and we need to continue to support communities to enhance access to technology, but also the library staff. We need to work with the City to understand how the library can be involved in putting our community librarians out in agencies and shelters, how they can be working in Toronto Community Housing locations, in seniors’ buildings, and providing on-site support for people who may have newfound Wi-Fi, including how we can be a pipeline to provide in-need communities with free laptops through our foundation, partnerships and donors.”

—**Pam Ryan**, Director, of Service Development and Innovation at Toronto Public Library and member of the Urban Libraries Council’s Digital Equity Action Team

PART 6: YOUTH AND DIGITAL SKILLS

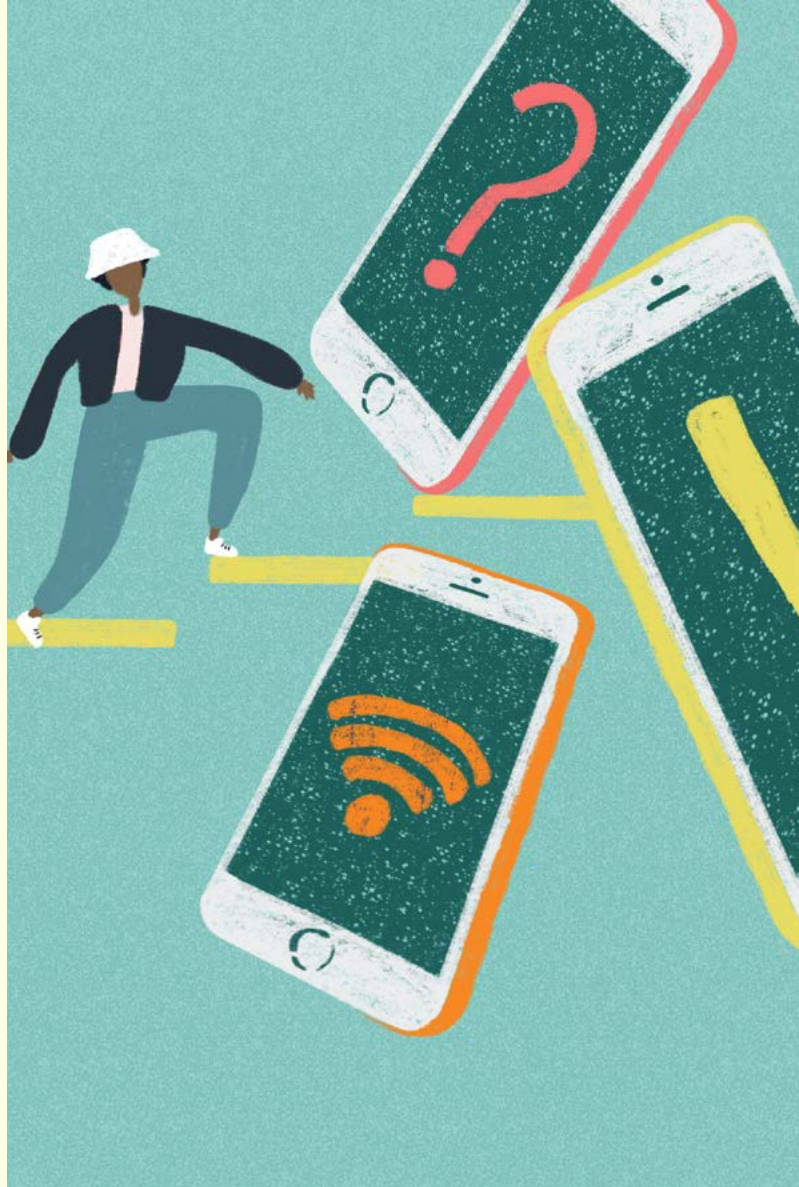
Key Takeaways

- A lack of digital access negatively impacted education outcomes and placed undue burdens on digitally underserved families during the pandemic, especially in low-income households and Indigenous communities. Without a reliable and sufficient internet connection or digital devices, some families were pushed to send their children to higher-risk, in-person school when available.
- Developing the workforce of the future requires providing Canadian youth with digital literacy upskilling, quality technology devices, critical thinking training, and building a set of digital ethics among young people that prioritizes values such as inclusivity, anti-bias and knowledge integrity.
- Policymakers have not fully recognized the positive impact a long-term commitment to closing internet affordability gaps can have on Canada's economic growth potential, particularly if young people become more eligible and digitally competent participants in the workforce.

LACK OF DIGITAL ACCESS AMONG YOUTH DURING THE PANDEMIC

Participants outlined that virtual learning formats during the pandemic negatively impacted students without home internet, particularly low-income, and Indigenous youth. Many families with multiple school-aged children and only one connected device faced difficulties accessing online classes. Experts in youth digital programming said the lack of reliable internet connections and sufficient devices compelled parents and teachers to ask for significant support from community organizations to learn how to set up computer programs, run online classes, and create a safe and engaging virtual space for youth.

Participants also noted that people without home internet or the ability to connect to their



peers online also faced increased isolation and significant mental health challenges. They highlighted that students struggling with isolation could not find the support they needed at home, as parents also struggled to work from home while navigating online school, troubleshooting digital challenges, and coordinating how to share devices among all household members. Young people also significantly rely on mobile devices as tools to communicate, learn, and connect with friends and family. Mobile devices have become nothing short of a necessity for youth today—particularly during a pandemic that has fundamentally transformed the ways we interact and build and maintain community from in-person to remote formats.

QUALITY OF TECHNOLOGY DEVICES

Participants outlined how the quality of technologies available to youth affects learning outcomes. Despite many efforts by school boards and libraries to deploy devices to students throughout the pandemic, participants highlighted young people's need for devices that are adaptive and updated. Outdated devices do not provide students with the ability to carry out advanced technical tasks (such as coding, navigating software, data management and programming language design) at the same quality and efficiency as evolving, state-of-the-art technologies. Providing youth with access to the right technologies requires that service providers understand the unique needs of the young people they serve—such as the specific challenges of youth with particular learning disabilities—to provide devices that accurately meet those needs.

THE ROLE OF DIGITAL LITERACY AND CRITICAL THINKING

Access to technology devices is only one part of youth's ability to meaningfully engage online. Participants outlined that digital literacy programs allow young people to develop critical computational thinking skills and a deep understanding of how technology works. Young people's understanding of the digital space as a malleable and fluid system allows youth to view technology as a tool that they can positively help shape and transform. Participants noted that shifting from a focus on the consumption of technology toward a framework of contribution to the digital space is an important part of building a future-ready population.

Moreover, participants emphasized that critical thinking skills are an important part of youth's digital education. Young people should begin to understand the value of their data, including how this information is being collected, used and shared. Participants noted that better digital awareness will allow youth to make informed decisions on privacy and security, especially among Indigenous communities and people of colour, who face relatively more surveillance in digital spaces.

In those communities, participants highlighted that young people are often the digital leaders of their households, helping to navigate health and government services for elders who may not always have the language or digital skills needed. Empowering young people to continue leading in the digital space requires educating them about how to evaluate information online, and identify cybersecurity threats and malicious software, as well as how to sufficiently protect their sensitive information.

DIGITAL VALUES OF THE FUTURE WORKFORCE

Participants emphasized that values such as inclusivity, safety and anti-bias are important to building young people's digital resiliency, and deepening their awareness of how they want to feel, engage and participate in digital spaces. According to a representative from Wikimedia, young people used Wikipedia at unprecedented rates to fact-check the overabundance of online information that spread during the pandemic—a promising sign that youth care about online integrity, and are becoming more skilled at identifying misinformation and understanding the differences in the quality of online knowledge. Participants highlighted that youth today are the first generation born in a world controlled by invasive technologies, such as artificial intelligence. A commitment to shaping our digital spaces in a way that is safe and accessible is only possible if our future digital designers develop inclusive values and critical thinking skills at an early age.

POLICY RECOMMENDATIONS:

- Prioritize affordable digital access for youth in low-income communities by coordinating the expansion of device refurbishment and sharing programs between private, public and community partners.
- Develop a future-ready workforce by expanding the number and scope of digital literacy programming focused on developing critical thinking, advanced technical programming and online safety skills among youth in all communities, with a particular focus on hard-to-reach and vulnerable groups such as low-income and Indigenous youth.
- Create an integrated network of schools, government, industry and community organizers that are well-informed about the unique needs of vulnerable communities, to provide the space for underrepresented youth to seriously engage in policy development and programming. Each sector is equally critical in alleviating the challenges to digital access for youth in Canada, deepening partnerships with community organizations and elevating young people's voices as meaningful decision-makers in the policymaking process.

“Our goal is to ensure that as our young people transition into this digital world, particularly those from the BIPOC community, that they are seeing themselves in those spaces, they have those skill sets that are necessary to navigate those spaces as they move forward. And although they may be into gaming, gaming is not the same as having digital literacy.”

—**Howard Moriah**, Manager of Youth & Community Outreach Services, Boys and Girls Club of East Scarborough

“Through my lens, it is a triangle. You have industry or industry players, then government at all levels, and then society, not-for-profits, community organizations or libraries, which were all so hit during the pandemic. There's also the triangle of what access really looks like. There's the hardware, then there's the internet, and then there's the learning of that content and material. Each piece of the triangle plays an equally important role. They all bring us together and lift all of us up. Otherwise, one person, or one part of that triangle, won't be able to do it alone.”

—**Kate Arthur**, CEO and Founder, Kids Code Jeunesse



CONCLUSION

The digital divide in Canada encapsulates a broad range of interconnected and layered complexities. No single solution is enough to connect all people in Canada. Expanding digital access by building out the necessary infrastructure in Canada's most remote communities, particularly within Indigenous communities and the North, is the first step to realizing the federal government's connectivity goals. However, a long-term approach to closing gaps in digital access involves much more than infrastructure investment. Vulnerable and marginalized communities, such as low-income individuals, older adults and people with disabilities deserve renewed attention and better targeted policy solutions to effectively expand meaningful digital inclusion to all people in Canada.

The Overcoming Digital Divides series created rich discussions and cross-sectoral dialogues between government, industry, academic and community representatives from across Canada to address how best to alleviate digital inequities and expand critical online services to communities that need them the most. The workshops attracted hundreds of participants from diverse locations and sectors across the country who asked enlightening questions, distributed resources, and shared their lived experiences with unique digital challenges. We want to thank all of the speakers, participants and partners who took part in this series, and presented invaluable insights on policy challenges and solutions to overcoming digital barriers.

Building such a comprehensive network of stakeholders provided us with a glimpse into what Canada's digital divide policies and programs should look like moving forward: guided by an evidence-informed set of principles that prioritizes the inclusion of all stakeholders—especially marginalized and under-represented voices—in the decision-making process to realize meaningful digital inclusion for all people in Canada.

ABOUT THE AUTHORS



Nour Abdelaal is a Policy Analyst at the Ryerson Leadership Lab. Nour has been working at the intersection of research, public service, academia and social advocacy. She is passionate about advancing innovative policy solutions in the realms of technology, cybersecurity and digital inclusion. Prior to joining the Leadership Lab, she was a Political Assistant at the U.S. Consulate General in Toronto, working to advance U.S.-Canada relations and provide research insights for the U.S. State Department's technology and economic portfolio. Nour was also a Compliance Analyst at the G20 Research Group at the Munk School of Global Affairs and the Finance Director of the University of Toronto's Amnesty International Chapter. She holds an MA in political theory, and a BA in political science and economics from the University of Toronto.



Sam Andrey is the Director of Policy & Research at the Ryerson Leadership Lab. Sam has led applied research and public policy development for the past decade, including the design, execution and knowledge mobilization of surveys, focus groups, interviews, randomized controlled trials and cross-sectional observational studies. He also teaches about public leadership and advocacy at Ryerson University and George Brown College. He serves on the board of the Institute of Public Administration of Canada, and chairs its research and professional practices committee. He previously served as Chief of Staff and Director of Policy to Ontario's Minister of Education, in the Ontario Public Service and in not-for-profit organizations advancing equity in education and student financial assistance reform. Sam has an Executive Certificate in Public Leadership from Harvard's John F. Kennedy School of Government and a BSc from the University of Waterloo.

ACKNOWLEDGEMENTS

The Ryerson Leadership Lab, Brookfield Institute for Innovation + Entrepreneurship, First Nations Technology Council, and Simon Fraser University's Public Square would like to thank our speakers for sharing their unique perspectives and invaluable insights on the digital divide. It is important to note that while the varied perspectives of our speakers and workshop participants greatly informed this report, the statements and recommendations are solely those of the authors.



Kate Arthur, CEO and Founder, Kids Code Jeunesse

Virginia Bosomworth, past President, the LIFE Institute

Eric Craven, Community Development Librarian and Digital Literacy Project Coordinator, Atwater Library and Computer Centre

Christina de Castell, Chief Librarian and CEO, Vancouver Public Library

Mo Dhaliwal, Founder and Director of Strategy, Skyrocket

Viveca Ellis, Interim Community Organizer, BC Poverty Reduction Coalition

Caroline Grammer, Professor, Seneca College, Faculty of Applied Arts and Sciences, Department of Community Services

Toby Harper-Merrett, Executive Director, Computers for Success Canada

Erin Knight, Access Campaigns Lead and Digital Rights Campaigner, OpenMedia

Michael Lenczner, CEO, Ajah; Director, Powered by Data; and Founder, Île Sans Fil

David Lepofsky, Visiting Professor of Disability Rights and Legal Education, Osgoode Hall Law School

Jennifer Manitowabi, Community Lead, Connected North

Heather McCain, Executive Director, Creating Accessible Neighbourhoods (CAN)

Michel Mersereau, Postdoctoral Fellow, Faculty of Information, University of Toronto

Jess Mitchell, Senior Manager, Research + Design at the Inclusive Design Research Centre, OCAD University

Howard Moriah, Manager of Youth & Community Outreach Services, Boys and Girls Club of East Scarborough

Honourable Joyce Murray, Minister of Digital Government, Government of Canada

Dionne Pelan, Computer and Drop-in Programs Coordinator, UBC Learning Exchange

Simona Ramkisson, Manager of Community Development, Wikimedia Foundation

Pam Ryan, Director of Service Development and Innovation, Toronto Public Library and member of the Urban Libraries Council's Digital Equity Action Team.

Ken Sanderson, Executive Director, Teach for Canada

Shazia Sobani, VP Customer Network Implementation, TELUS

Susan Stanford, Assistant Deputy Minister, Connectivity, Ministry of Citizens' Services, B.C. Government

Denise Williams, CEO, First Nations Technology Council

Karen Wong, Researcher, Science and Technology, for Aging Research Institute at Simon Fraser University and Clinical Advisor, 411 Seniors Centre

Alice Xu, Manager of the Connected Community/ Smart City Program, City of Toronto

REFERENCES

- 1 McKeown, L., Noce, A. & Czerny, P. (2007, September). Factors Associated with Internet Use: Does Rurality Matter? Statistics Canada. <https://www150.statcan.gc.ca/n1/en/pub/21-006-x/21-006-x2007003-eng.pdf?st=8yP3h1Tt>
- 2 Canadian Radio-television and Telecommunications Commission. Government of Canada. (2020). *Communications Monitoring Report 2020*. <https://crtc.gc.ca/pubs/cmr2020-en.pdf>
- 3 Davidson, J; Schimmele, C. (2019, July 10). Statistics Canada. Government of Canada. *Evolving Internet Use Among Canadian Seniors*. <https://www150.statcan.gc.ca/n1/pub/11fo019m/11fo019m2019015-eng.htm>
- 4 Statistics Canada. Government of Canada. (2016). Canadian Survey on Disability, 2012. <https://www150.statcan.gc.ca/n1/pub/89-654-x/89-654-x2016001-eng.htm>
- 5 Statistics Canada. Government of Canada. (2021, June 22). *Canadian Internet Use Survey, 2020*. <https://www150.statcan.gc.ca/n1/daily-quotidien/210622/dq210622b-eng.htm>
- 6 Canadian Radio-television and Telecommunications Commission. Government of Canada. (2016). *Telecom Regulatory Policy CRTC 2016-496*. <https://crtc.gc.ca/eng/archive/2016/2016-496.htm>
- 7 Innovation, Science and Economic Development Canada. Government of Canada. (2019, July 16). *Highspeed Access for All: Canada's Connectivity Strategy*. https://www.ic.gc.ca/eic/site/139.nsf/eng/h_00002.html
- 8 CRTC (2020).
- 9 CRTC (2020).
- 10 CRTC (2020).
- 11 Infrastructure Canada. Government of Canada. (2019). *Rural Opportunity, National Prosperity: An Economic Development Strategy for Rural Canada*. <https://www.infrastructure.gc.ca/rural/index-eng.html>
- 12 Pasternak, S; Houle, R. (2020, April 9). *No Such Thing as Natural Disasters: Infrastructure and the First Nation Fight Against COVID-19*. Yellowhead Institute. <https://yellowheadinstitute.org/2020/04/09/no-such-thing-as-natural-disasters-infrastructure-and-the-first-nation-fight-against-covid-19/>
- 13 CRTC (2020).
- 14 (CIUS, 2021).
- 15 Innovation, Science and Economic Development Canada. Government of Canada. (2021, July 9). *Nearly 280,000 Ontario residents to benefit from historic agreement to improve access to high-speed Internet*. <https://www.canada.ca/en/innovation-science-economic-development/news/2021/07/nearly-280000-ontario-residents-to-benefit-from-historic-agreement-to-improve-access-to-high-speed-internet.html>
- 16 Ibid.
- 17 Innovation, Science and Economic Development Canada. Government of Canada. (2021, April 23). *Universal Broadband Fund*. https://www.ic.gc.ca/eic/site/139.nsf/eng/h_00006.html
- 18 Innovation, Science and Economic Development Canada. Government of Canada. (2021, June 10). *Connect to Innovate*. <https://www.ic.gc.ca/eic/site/119.nsf/eng/home>
- 19 Government of Canada. (2020, February 10). *Connecting Canadians Digital Canada 150*. <https://www.ic.gc.ca/eic/site/028.nsf/eng/home>
- 20 Innovation, Science and Economic Development Canada. Government of Canada. (2019, July 24). *Minister Bains announces major investment in the future of connectivity for Canadians living in rural and remote communities*. <https://www.canada.ca/en/innovation-science-economic-development/news/2019/07/minister-bains-announces-major-investment-in-the-future-of-connectivity-for-canadians-living-in-rural-and-remote-communities.html>
- 21 The Government of Ontario. (2021, July 16). *Ontario connects: bringing high-speed internet to every community*. <https://www.ontario.ca/page/ontario-connects-bringing-high-speed-internet-to-every-community>
- 22 Saint-Arnaud, P. (2019, October 18). *Quebec invests millions for high-speed internet in the regions*. *Global News*. <https://globalnews.ca/news/6052008/quebec-high-speed-internet/>
- 23 Develop Nova Scotia. (2020). *Internet for Nova Scotia Initiative*. <https://developns.ca/projects/high-speed-internet/>
- 24 Government of British Columbia. *Connectivity Funding Programs*. <https://www2.gov.bc.ca/gov/content/governments/connectivity-in-bc>
- 25 Office of the Premier of New Brunswick. (2018, August 3). *Faster internet to become available in rural New Brunswick*. https://www2.gnb.ca/content/gnb/en/news/news_release.2018.08.1079.html

- 26 Innovation, Science and Economic Development Canada. Government of Canada. (2018, June 20). News Release. *Yukon communities to benefit from more reliable Internet*. <https://www.canada.ca/en/innovation-science-economic-development/news/2018/06/yukon-communities-to-benefit-from-more-reliable-internet.html>
- 27 Economic Growth, Tourism and Culture. (2020, August 25). *Government of Prince Edward Island. Internet Plan*. <https://www.princeedwardisland.ca/en/information/economic-growth-tourism-and-culture/internet-plan>
- 28 Executive Council. Tourism, Culture, Industry and Innovation. (2018, January 2). *Government of Newfoundland and Labrador. Significant Investments to Improve Internet Access in Newfoundland and Labrador*. <https://www.gov.nl.ca/releases/2018/exec/0102n01/>
- 29 Infrastructure Ontario. Government of Ontario. (2021, July 16). *Ontario Connects*. <https://www.infrastructureontario.ca/Ontario-Connects/>
- 30 Ibid.
- 31 Ontario Newsroom. Government of Ontario. (2021, August 27). *Ontario Partners With World-Class Satellite Operator to Bring High-Speed Connectivity Across Province*. <https://news.ontario.ca/en/release/1000680/ontario-partners-with-world-class-satellite-operator-to-bring-high-speed-connectivity-across-province>
- 32 Innovation, Science and Economic Development Canada. Government of Canada (2019, November 22). *Connecting Families*. <https://www.ic.gc.ca/eic/site/111.nsf/eng%20/home>
- 33 CIUS (2021).
- 34 Lessons learned: The pandemic and learning from home in Canada. (2021, September). *Diversity Institute*. https://www.ryerson.ca/diversity/reports/Lessons-Learned_EN.pdf
- 35 The pandemic and learning from home in Canada. (2021, September). Diversity Institute. https://www.ryerson.ca/diversity/reports/Lessons-Learned_EN.pdf
- 36 Andrey, S., Masoodi, M.J., Malli, N., & Dorkenoo, S. (2021, January). *Mapping Toronto's Digital Divide*. Ryerson Leadership Lab and Brookfield Institute for Innovation + Entrepreneurship. <https://www.ryersonleadlab.com/digital-divide>
- 37 Media Technology Monitor (Fall 2017) available in Figure 1.8 of *CRTC Communications Monitoring Report 2019*.
- 38 Statistics Canada. (2020, July 6). Government of Canada. *The vulnerability of Canadians with disabilities during the COVID-19 pandemic*. <https://www150.statcan.gc.ca/n1/daily-quotidien/200706/dq200706a-eng.htm>
- 39 CIUS (2021)
- 40 Ibid.
- 41 Stories from the First Mile: Digital Technologies in Remote and Rural Indigenous Communities. (2018). *First Mile Connectivity Consortium*. <http://firstmile.ca/wp-content/uploads/Stories-from-the-First-Mile-2018.pdf>
- 42 CIUS (2021)
- 43 Ibid.
- 44 TELUS. *Internet For Good*. <https://www.telus.com/en/social-impact/connecting-canada/internet-for-good>
- 45 Rogers. *Connected for Success: We bring more Canadians online*. <https://about.rogers.com/giving-back/connected-for-success>
- 46 GEO Nova Scotia. *Getting Everyone Online*. <https://geonovascotia.ca>
- 47 Connected North. *Transforming Lives Through Technology*. <https://www.connectednorth.org/en/>
- 48 CRTC (2020).
- 49 City of Toronto Digital Infrastructure Plan. (2021, September). City of Toronto. <https://www.toronto.ca/wp-content/uploads/2021/09/8ff3-DIP-FINAL-Ethelo-Sep-23-Accessible.pdf>
- 50 City of Vancouver Digital Strategy. (2013, April). City of Vancouver. https://vancouver.ca/files/cov/City_of_Vancouver_Digital_Strategy.pdf
- 51 CIUS (2021).
- 52 Ibid.
- 53 Ibid.
- 54 Lessons learned: The pandemic and learning from home in Canada. (2021, September). Diversity Institute. https://www.ryerson.ca/diversity/reports/Lessons-Learned_EN.pdf
- 55 Browen, J. (2020, September 8). *Canada's college and universities roll out fall pandemic plans*. Course Compare. <https://www.coursecompare.ca/covid-19-canadas-colleges-and-universities-roll-out-fall-pandemic-plans/>
- 56 Lessons learned: The pandemic and learning from home in Canada. (2021, September). Diversity Institute. https://www.ryerson.ca/diversity/reports/Lessons-Learned_EN.pdf

- 57 CIUS (2021).
- 58 Ibid.
- 59 Statistics Canada. Government of Canada. (2021, May 26). Working from home after the COVID-19 pandemic: An estimate of worker preferences. <https://www150.statcan.gc.ca/n1/pub/36-28-0001/2021005/article/00001-eng.htm>
- 60 Statistics Canada. Government of Canada. (2021, February 24). *Economic performance associated with digitalization in Canada over the past two decades*. <https://www150.statcan.gc.ca/n1/pub/36-28-0001/2021002/article/00001-eng.htm>
- 61 Chiou, L. (2020). Social Distancing, Internet Access and Inequality. National Bureau of Economic Research, Working Paper No. 26982.
- 62 Vu, V. & Kim, S. (2020, August 18). *Are Tech Jobs More Pandemic-Proof?* Brookfield Institute for Innovation + Entrepreneurship. <https://brookfieldinstitute.ca/are-tech-jobs-more-pandemic-proof/>
- 63 CIUS (2021).
- 64 Ibid.
- 65 Ibid.
- 66 Ibid.
- 67 Ibid.
- 68 Apavaloae, A. (2021, May 31). *Canada bets on investing in innovation as a way to drive growth and overcome pandemic*. Toronto Star. <https://www.thestar.com/opinion/contributors/2021/05/31/canada-bets-on-investing-in-innovation-as-a-way-to-drive-growth-and-overcome-pandemic.html>
- 69 Innovation, Science and Economic Development. Government of Canada. (2019, February 12). *Innovation for a Better Canada: What We Heard*. https://www.ic.gc.ca/eic/site/062.nsf/eng/h_00102.html
- 70 Statistics Canada. Government of Canada. (2021, February 24). *Measuring digital intensity in the Canadian economy*. <https://www150.statcan.gc.ca/n1/pub/36-28-0001/2021002/article/00003-eng.htm>
- 71 Statistics Canada. Government of Canada. (2019, May 9). *Measuring digital economic activities in Canada: Initial estimates*. <https://www150.statcan.gc.ca/n1/pub/13-605-x/2019001/article/00002-eng.htm>
- 72 Statistics Canada. Government of Canada. (2021, February 24). *Economic performance associated with digitalization in Canada over the past two decades*. <https://www150.statcan.gc.ca/n1/pub/36-28-0001/2021002/article/00001-eng.htm>
- 73 Vu, V., Lamb, C. & Willoughby, R. (2019, December). *I, Human: Digital and Soft Skills in a New Economy*. Brookfield Institute for Innovation + Entrepreneurship. <https://brookfieldinstitute.ca/wp-content/uploads/I-Human-ONLINE-FA-1.pdf>
- 74 Ibid.
- 75 The Information and Communications Technology Council. (2016). *Skills in the digital economy: where Canada stands and the way forward*. <https://www.ictc-ctic.ca/wp-content/uploads/2016/05/Skills-in-the-Digital-Economy-Where-Canada-Stands-and-the-Way-Forward-.pdf>
- 76 Michael, D ; Aggarwal, N ; Kennedy, D; et. al. (2013). *Ahead of the curve: lessons on technology and growth from small-business leaders*. https://image-src.bcg.com/Images/Ahead_of_the_Curve_Oct_2013_tcm9-94245.pdf
- 77 Pierre-Olivier Bédard-Maltais (2019, July). *Expand Online: Strategies to Boost Sales, Profits and Exports*. BDC. https://www.bdc.ca/EN/Documents/analysis_research/expand-online_study.pdf, as cited in Goldsmith, T. (2021, June). *Picking Up Speed: Digital Maturity in Canadian SMEs - and Why Increasing It Matters*. Brookfield Institute for Innovation + Entrepreneurship. <https://brookfieldinstitute.ca/wp-content/uploads/BIIE-WTC-Digital-Maturity-report-FINAL-1-1.pdf>
- 78 Goldsmith, T. (2021, June). *Picking Up Speed: Digital Maturity in Canadian SMEs – and Why Increasing It Matters*. Brookfield Institute for Innovation + Entrepreneurship. <https://brookfieldinstitute.ca/wp-content/uploads/BIIE-WTC-Digital-Maturity-report-FINAL-1-1.pdf>
- 79 Ibid.
- 80 Ibid.
- 81 Ibid.
- 82 Thomas, J. (2016, November). *New Evidence on the Canada-U.S. ICT Investment Gap, 1976-2014*. Centre for the Study of Living Standards. <http://www.csls.ca/reports/csls2016-17.pdf>
- 83 CIUS (2021)
- 84 Ibid.
- 85 Ibid.
- 86 Ibid.
- 87 Ibid.
- 88 Ibid.

- 89 Ryerson University representative online survey in May 2020 of 2,000 Canadians; see: <https://www.cybersecurepolicy.ca/agenda>
- 90 Statistics Canada. Government of Canada. (2020, April 15). *COVID-19 Pandemic: School Closures and the Online Preparedness of Children*. <https://www150.statcan.gc.ca/n1/pub/45-28-0001/2020001/article/00001-eng.htm>
- 91 Statistics Canada. Government of Canada. (2020, December 14). *Digital literacy skills of Canadian youth compare favourably with the OECD average*. <https://www150.statcan.gc.ca/n1/daily-quotidien/201214/dq201214a-eng.htm>
- 92 DeClerq, K. (2020, April 17). *Ontario distributing free iPads to kids who cannot access province's online learning tools*. CTV News. <https://toronto.ctvnews.ca/ontario-distributing-free-ipads-to-kids-who-cannot-access-province-s-online-learning-tools-1.4900317>
- 93 Fowler, D. (2020). *We need to get all Canadian students online quickly in the face of pandemic uncertainty*. CBC. <https://www.cbc.ca/news/opinion/opinion-children-students-internet-access-1.5583321>
- 94 Ibid.
- 95 Statistics Canada. Government of Canada. (2020, December 14). *Digital literacy skills of Canadian youth compare favourably with the OECD average*. <https://www150.statcan.gc.ca/n1/daily-quotidien/201214/dq201214a-eng.htm>
- 96 Canadian Internet Registration Authority. (2018). *The Gap Between Us: Perspectives on Building a Better Online Canada*. <https://www.cira.ca/resources/state-internet/report/gap-between-us-perspectives-building-a-better-online-canada>
- 97 CIUS (2021).
- 98 Ibid.
- 99 Ibid.
- 100 Schrumm, A; Bell,S; Smith, T. (2021, July 13). *Building Bandwidth: Preparing Indigenous youth for a digital future*. Royal Bank of Canada. <https://thoughtleadership.rbc.com/building-bandwidth-preparing-indigenous-youth-for-a-digital-future/>
- 101 Ibid.
- 102 CIUS (2021).
- 103 Ibid.
- 104 Ibid.
- 105 Ibid.
- 106 Digital Literacy Exchange Program. (2019, November 22). Innovation Science and Economic Development Canada. <https://www.ic.gc.ca/eic/site/102.nsf/eng/home>
- 107 Huynh, A. & Nisa, M. (2018, June). *Levelling Up: the Quest for Digital Literacy*. Brookfield Institute for Innovation + Entrepreneurship. <https://brookfieldinstitute.ca/wp-content/uploads/Level-Up-report-FINAL-online-1.pdf>
- 108 Ibid.
- 109 Ibid.
- 110 Ibid.
- 111 Ibid.
- 112 Ibid.
- 113 Ibid.
- 114 Huynh, A. & Nisa, M. (2020, September). *Plugging In: Empowering Communities to Ensure Digital Literacy Access for Youth*. Brookfield Institute for Innovation + Entrepreneurship. <https://brookfieldinstitute.ca/wp-content/uploads/Plugging-In-Report-2.pdf>
- 115 Ibid.
- 116 Ibid.
- 117 Chung, E. (2013, July 18). *Small Alberta town gets massive 1,000 Mbps broadband boost*. CBC News. <https://www.cbc.ca/news/science/small-alberta-town-gets-massive-1-000-mbps-broadband-boost-1.1382428>
- 118 City of Sandy. (n.d.). SandyNet. <https://www.ci.sandy.or.us/sandy.net>