



Ontario

Harnessing Innovation to Drive Global Competitiveness

Cisco Canada Digital Readiness Index 2023



Provincial Insights Brief

DRI Score: 0.98 | Ranking: 3rd

In today's world, digitally mature countries have the infrastructure, governance, labour force, digital services and technologies to support social development, economic growth and global competitiveness.

Major technology trends including mobility, 5G networks, cybersecurity, Internet of Things (IoT) and cloud solutions have compelled countries to reimagine government, enhance access to public services, promote innovation and drive technology adoption.

At Cisco, we are fuelled by our purpose to 'Power an Inclusive Future for All' by leveraging our technology, our expertise and our extended ecosystem to bridge gaps of inequity and drive change. Cisco's desire to solve global problems and create a more inclusive world through technology led to our first Global Digital Readiness Index (DRI) in 2017. In 2023, we completed the Cisco Canada Digital Readiness Index, a comprehensive analysis of Canada to help provinces and territories better understand the building blocks of digital readiness and explore opportunities to improve their relative performance.

This holistic model measures digital readiness across many components beyond technology including basic needs, human capital and the business and start-up environment. While access to technology and the infrastructure to support digital technologies is critical, if, for instance, individuals' basic needs are not met, a country cannot maximize the benefits of digital opportunity. The Cisco Canada Digital Readiness Index provides an understanding of a province or territory's level of digital readiness and what interventions and investments could help them advance.

The Cisco Canada DRI is based on data published from 2019 to fall of 2022. For more information on Canada's national digital readiness score, the full report is available [here](#).*

This guide was developed to enable provinces and territories to understand their level of digital readiness and explore areas of opportunity to reach their full potential.

Measuring Digital Readiness: DRI Components

The Cisco Canada Digital Readiness Index (DRI) employs a comprehensive framework and model based on seven different components of digital readiness including **Basic Needs**; **Business and Government Investment**; **Ease of Doing Business**; **Human Capital**; **Start-Up Environment**; **Technology Adoption**; and **Technology Infrastructure**. Unique, market-specific metrics serve as proxies for performance in each of the components.



Basic Needs

Basic needs for a population to survive and thrive

Metrics

- Life expectancy
- Low Income
- Food insecurity
- Housing affordability



Business & Government Investment

Private and public investment in innovation and technology

Metrics

- Business expenditure on R&D
- Government expenditure on R&D
- Infrastructure investment



Ease of Doing Business

Basic infrastructure/policies needed to support business continuity

Metrics

- Business density
- Business growth
- Business confidence
- Internal trade barriers



Human Capital

Skilled labour force to support digital innovation (build and maintain)

Metrics

- Labor force participation
- Youth population
- Post-secondary education
- Immigration



Start-Up Environment

Environment which fosters innovation within a community

Metrics

- Venture capital investment
- Business entries
- Access to financing



Technology Adoption

Demand for digital products/services continuity

Metrics

- Zero emission vehicle (ZEV) registrations
- Broadband subscriptions
- Online sales



Technology Infrastructure

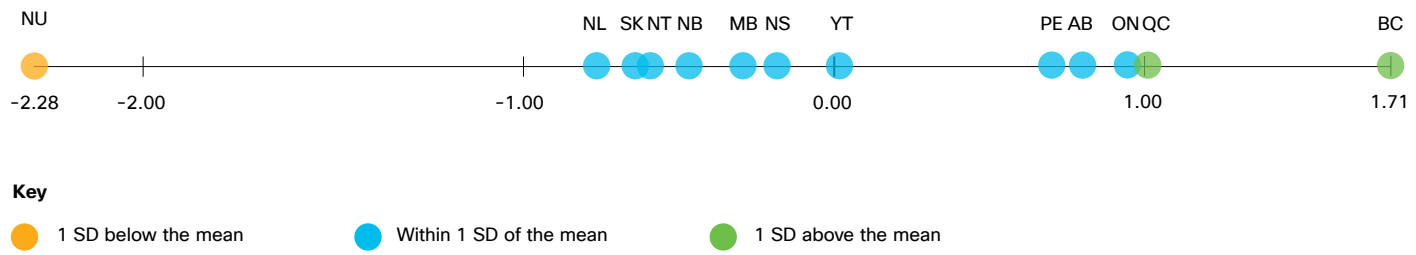
Infrastructure available to enable digital activities and connected to consumers (IoT, Cloud)

Metrics

- Broadband availability
- LTE coverage
- EV charging stations
- Internet affordability



Overall DRI Score Across Provinces and Territories



The Cisco Canada DRI examines the performance of Canada’s provinces and territories and provides a benchmark on their progress towards digital readiness¹. British Columbia tops Canada’s DRI ranking with a sizable lead, followed by Québec and Ontario, while the remainder of the provinces and territories fall closer to Canada’s national average DRI score. The exception is Nunavut, which faces unique digital readiness challenges.

¹ Z-scores are a way to measure how far away a particular data point is from the average (or “mean”) of a group of data points, and how unusual or “extreme” that value is compared to the rest of the group. If a score is below the mean, it is expressed as a negative number, and if above the mean, it will be a positive number.

Ontario's Digital Readiness Index

DRI Score: 0.98 | Ranking: 3rd

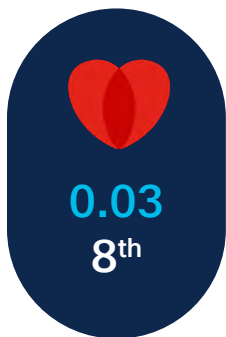
Ontario's DRI score highlights how digital readiness has been a priority for the province with the highest score in Canada on **Business and Government Investment**, and strong scores in **Start-up Environment, Technology Adoption, Technology Infrastructure** and **Human Capital**.

Ontario's scores in each of the DRI components demonstrate that the province has a firm foundation to further advance its digital readiness and global competitiveness. But building a world-leading digital economy that puts people first and delivers a more prosperous future for everyone requires ongoing focus and investment.

Ontario's DRI score of 0.98 is well above the national average driven by the province's supportive start-up environment and high R&D investment.

DRI Scores: A breakdown by component

The following section will explore how Ontario scored in each of the DRI's seven components and what metrics drove performance.



Basic needs are an indicator of the health of a society.

- Ontario's eighth place ranking is due in large part to its acute affordable housing crisis, with costs representing a larger proportion of post-tax median income at 32.3% compared to the Canadian median of 22.8%
- That said, the province is tied with Quebec for the highest life expectancy in Canada (82.6 years vs the 80.4 median)



The capacity of government and businesses to invest in their future is a key factor in enabling digital readiness.

- In Ontario, the federal and provincial government's total R&D annual investment of \$3.7 billion is the highest in the country.
- Ontario has the highest business R&D expenditures per capita at \$687 compared to the national median of \$199; these investments demonstrate business confidence in the province's human capital resources and innovation ecosystem.



An environment where businesses can invest and grow with ease and confidence is a core foundation to digital readiness.

- Ontario is a global destination of choice for businesses, which is reflected in the province having the third-highest business growth metrics.
- However, fluctuating macro-economic circumstances during and post the pandemic caused some businesses in Ontario to report reduced confidence about their economic future. This has contributed to the province placing eighth in this component.



Human Capital – a society’s ability to build and maintain a skilled labour force – is intrinsic to digital innovation and readiness.

- Size, age and training of a labour force impacts how fast an economy can grow, adapt and digitize.
- Ontario ranks fourth in Human Capital due to its higher percentage of people (age 25-64) holding post-secondary degrees at 73% compared to the median of 70%, and its significantly higher proportion of university graduates at 39% versus the national median of 30%.



Start-ups are an important source of innovation and economic growth.

- High venture capital investment per capita contributed to Ontario’s second place ranking in start-up environment.
- Despite this, businesses in the province are the most likely to report access to financing as an obstacle.
- These uniquely different funding sources are equally critical for start-up formation rates and growth, and if gaps are addressed, could build on existing momentum in this area.



Technology Adoption serves as a proxy for the population’s willingness and ability to use new and emerging technologies.

- In Ontario, businesses are leading adoption with online sales; on average, businesses in the province do 9.9% of their sales online compared to the median of 5.7%.
- The province also ranks fourth in both EV adoption and broadband subscriptions, reflecting a readiness by Ontarians to adopt new technologies.



Modern technology infrastructure is key to economic growth and the delivery of services.

- With one of the highest LTE coverage rates and internet affordability in the country, Ontario is paving the way for technological advancements in the digital age.
- However, the province’s slightly below-average ranking in electric vehicle (EV) charging infrastructure suggests room for improvement in adopting cutting-edge technology.
- Nevertheless, the province’s overall tech infrastructure creates a conducive environment for businesses and entrepreneurs to innovate and succeed, further bolstering Ontario’s economy.

Ontario's Opportunities

A Path Forward

The Cisco Canada DRI identifies strengths and opportunities for Ontario to further improve its digital readiness.



Supporting the digitization of businesses

The Government of Ontario has long taken a comprehensive approach to supporting the digitization of business for those businesses to increase productivity and remain globally competitive. From significant investments in broadband and connectivity, to funding programs and tax incentives that support technology investments, to Ontario's Digital and Data Strategy that helps businesses understand their obligations on data and privacy, Ontario is at the forefront of helping businesses digitally transform for the future. But in a dynamic and increasingly competitive world, Ontario can't stand still.

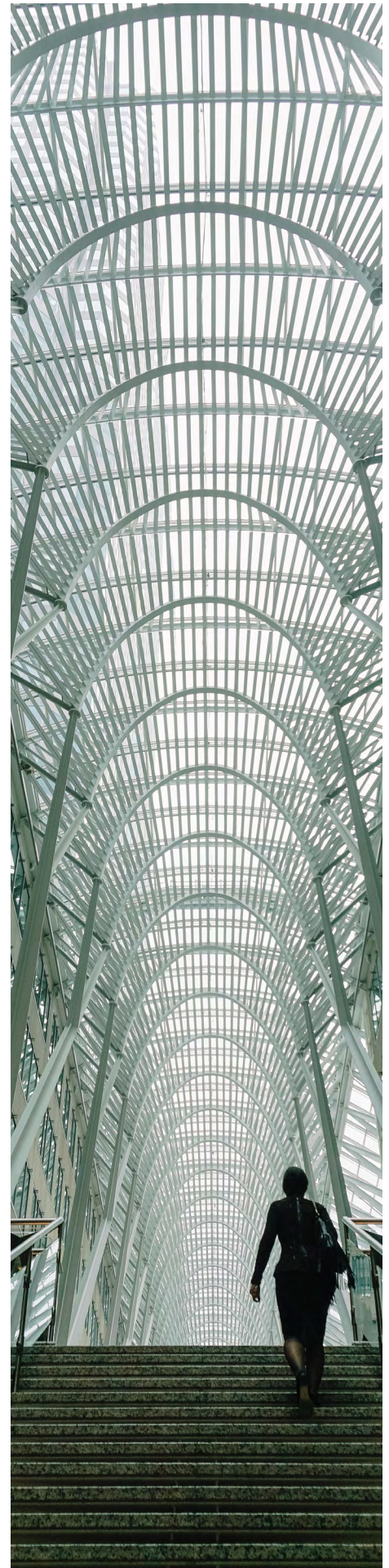
In Ontario, 700,000 homes and businesses still do not have access to the high-speed internet they need to digitize and compete. In fact, the *Ontario Chamber of Commerce's (OCC) 2023 Ontario Economic Report*, notes that investing in "broadband internet infrastructure" is the third infrastructure priority for Ontario businesses, only behind investments in health care and supply chains. The same OCC report also notes that government support for business adoption of technology is a top 10 priority for Ontario businesses across all sizes, sectors and regions. With the increased digitization of business, cybersecurity has become even more important and businesses will need additional supports to ensure cyber readiness and resilience. In fact, *Cisco's Cybersecurity Readiness Index* states that a mere 9% of Canadian organizations are 'mature' in their cybersecurity readiness, compared to the global average of 15%.



Transforming healthcare services with technological solutions

Ontario's healthcare system is facing increased demands resulting from the COVID-19 pandemic, population growth, and an aging population. At the same time, the healthcare system is operating with a shortage of workers. Innovative digital solutions could help ease the growing pressures and deliver better citizen care.

The integration of digital health technologies can create efficiencies, enhance patient care, increase access to services, establish inclusive structures and processes and drive down costs.



For instance, telemedicine can improve access to care in northern and rural communities, while digital healthcare records can streamline service delivery across the spectrum of care. The success of digital health technologies can be seen in countries including Estonia, Denmark, and Sweden, which are leading the way in adopting innovative technologies like digital health records and virtual care appointments.

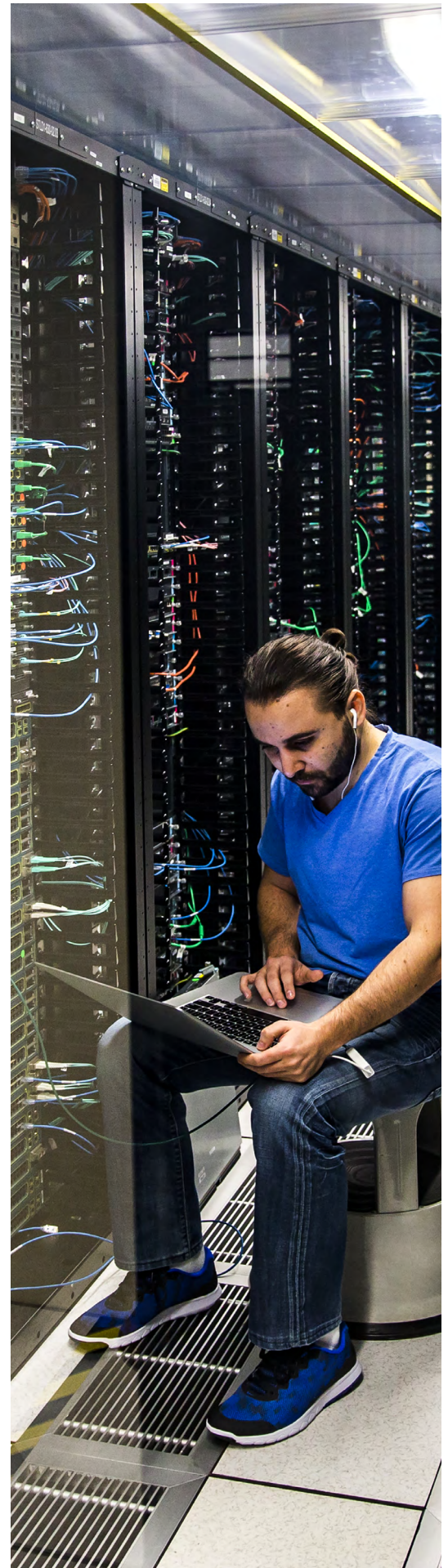
The necessity of the COVID19 pandemic as well as recent initiatives such as the Ontario government's 2019 Digital First for Health Strategy and the federal government's 2021 \$46 million investment in digital healthcare systems have made virtual healthcare and digital services more accessible. A recognition of the value of digital investments is reflected in the 2023 federal, provincial and territorial \$196 billion healthcare funding agreement. The provincial government and health system partners should continue to develop tech-centric models for patient care and adopt new and emerging technologies to increase access and improve healthcare delivery.



Increasing broadband availability

Fast and reliable internet is necessary for both businesses and individuals to realize the full value of new technologies and must be supported by strong technology infrastructure. Currently, 99.1% of households in Ontario have access to fixed broadband and the average cost of an internet subscription is \$76 per month. But the digital divide continues to persist in “digital deserts” in northern, rural, remote, and Indigenous communities, where cost is a barrier to access for low-income households, creating major digital equity and inclusion concerns.

Recognizing the importance of quality broadband access, the government has committed to getting every Ontarian connected to high-speed internet by 2025. To meet this goal, the provincial government created the *Up to Speed: Ontario's Broadband and Cellular Action Plan* and *Improving Connectivity for Ontario* program, which is focused on addressing the gap in broadband connectivity. The Government of Ontario quantifies “high-speed internet” as 50 Mbps for downloads and 10 Mbps for uploads, but these targets may be insufficient for an increasingly digital world. Looking forward, the provincial government should set an ambitious, new definition of “high-speed internet.” For example, the Government of the Netherlands has *set a goal of providing all citizens with fast, fixed-connection broadband* of at least 100 Mbps and a vast majority should be taking advantage of 1 Gbps by 2023.



Conclusion

Ontario's third place DRI ranking in Canada is a testament to the province's supportive start-up environment and high investment in research and development. The province has positioned itself as a global leader in the digital world, with a focus on, in its own words, *'protecting, supporting, connecting and equipping its people and businesses for success'*. An open-for-business policy approach creates an environment for businesses to thrive.

Ontario should continue its efforts to remain globally competitive and future ready. This requires a collective approach from governments, businesses and civic institutions to bring world-class digital services to Ontarians, including digital health technologies, and digital adoption and enablement in the private sector. Ontario's success as a leading digital province will depend on a sustained commitment to invest in and capture the opportunities that digital capabilities create.

