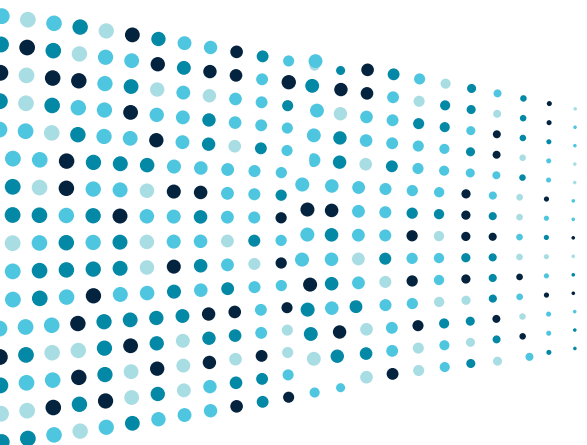


# The Way Forward: Addressing Challenges Facing the National Statistical System

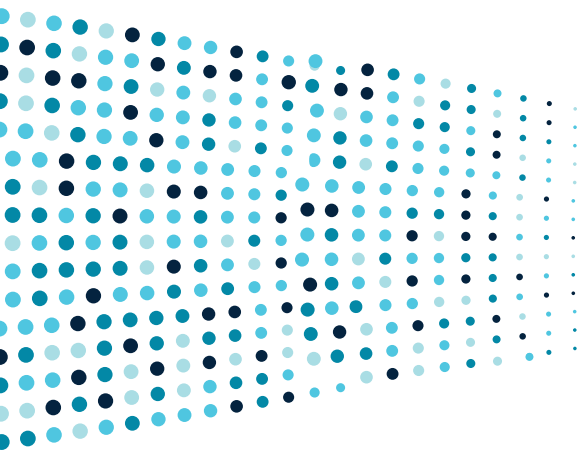
# 2023

## Annual Report



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# Message from the Canadian Statistics Advisory Council

The national statistical system<sup>1</sup> is essential for helping Canadians keep pace with a rapidly changing society. Modernizing statistical methods and technologies makes it possible to produce relevant statistical information, which is critical for enabling Canadians to make informed decisions, lead innovation and address the country's most pressing problems. Canadians need credible and trusted data, especially within the current context of misinformation and disinformation.

Governments must have access to high-quality data to design and deliver effective public services to meet Canada's most critical needs, such as affordable housing and access to health care, as well as respond to rising costs and the environmental and economic effects of climate change.

In difficult times, data become even more crucial for understanding and tackling important issues. The cost of programs and decisions based on poor or incomplete data can be enormous. The country's data ecosystem and statistical programs are essential, core infrastructure that should not be nickel-and-dimed or subject to budget cuts. Rather, there must be greater investment in developing a cohesive national data system that is critical to supporting economic recovery and ensuring Canada's prosperity and well-being.

Developing and using statistical data today require the latest technologies, such as cloud computing, generative artificial intelligence and sensors. A wide range of new data science and analytical skills are also necessary.

At the same time, there must be an openness to dialogue on the importance and use of data and a commitment to shared data standards.

This year's report from the Canadian Statistics Advisory Council examines emerging data practices that are shaping the statistical system, as well as the opportunities and barriers associated with new data sources. This focus builds on the Council's previous reports, which looked at the importance of having timely, consistent, and disaggregated data; the need for new types of partnerships and data coordination; and principles for developing a national statistical system to address critical data needs.

Meeting data needs and expectations can be challenging. The Council has been advocating for public and private organizations to work with Statistics Canada in coordinating and standardizing measures and data flows. The private sector has an important role to play as part of Canada's national statistical system, because governments alone cannot meet the growing information needs of Canadians.

We are grateful to Statistics Canada, the Chief Statistician of Canada (who is an ex officio member of the Council) and his excellent team for responding to our requests for information with both written and oral presentations. We offer particular thanks to Sam Ndayishimye and Gaëlle Miollan of the Canadian Statistics Advisory Council Secretariat for their advice and assistance. We are also grateful for the work of Dr. Céline Le Bourdais and her insights as a member of the Council these past few years.

We would like to thank Anil Arora for his exceptional service as Chief Statistician. Over the course of his mandate, Anil has ushered in critical modernization and transformation that have helped ensure the agency's central role in the national statistical system and continue to be a world leader among statistical agencies. It is important that his successor carry on the work of modernization to ensure that Statistics Canada and the national statistical system keep adapting to changing data needs and technologies. This includes working with partners from all sectors, inside and outside of government, in developing critical statistical infrastructure and data flows. The new Chief Statistician will also need to foster meaningful dialogue with Canadians on why good data matter and to maintain the trust that their data will be protected.

Signed:

*The Canadian Statistics Advisory Council*

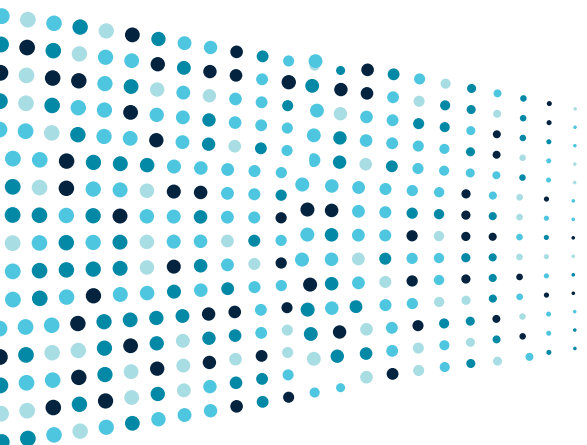
Dr. Howard Ramos, Chairperson

Annette Hester

Dr. Benoit Dostie

David Chaundy

Jan Kestle



# Executive summary

## Engagement and knowledge



People are inundated daily with information. It can be a challenge to distinguish reliable data from all the figures and “facts” they see and hear. This can result in misinformation and misunderstandings about issues of importance to Canadians.

Statistics Canada has a vital role to play in promoting and teaching data literacy and analytical skills. This includes raising awareness of why official statistics matter and how they are being collected, stored and used. It also includes helping Canadians and policy makers understand the implications of new technologies and how they shape statistical information.

The agency has made important investments in cloud technologies,

data analytics and real-time remote access to its data holdings. Its methodologists and analysts are expanding their expertise to work with new types of data, such as satellite imagery, scanner data and environment samples. Modern methods and data sources must then be blended with time-tested methods and data in a statistically rigorous fashion. This requires a new way of thinking about how different forms of data relate to each other and how they contribute to a more complete understanding of societal issues.

Statistical organizations have an important role to play in helping Canadians appreciate the groundbreaking implications of artificial intelligence on data. Improper use of artificial intelligence

can lead to misunderstandings of issues around data, their need, and their development and an erosion of trust and disengagement of citizens. Canadians benefit from Statistics Canada being a leader in the country

and internationally, chairing groups that identify and address common challenges encountered when incorporating machine learning in production processes.

## Data flows



Today's society needs new types of data, with greater frequency and granularity, to address issues of top concern. Almost every sector is asking for good, timely data.

Leading-edge methods and technology can transform and integrate digital forms of information into valuable data. New public and private data are already being drawn upon in areas such as prices, transportation, housing, labour, agriculture, the environment, tourism and economic development. When data are shared across jurisdictions, and across sectors, the ability to plan and evaluate the benefits of programs increases dramatically. This is not possible without ongoing investments by the federal government and other sectors to enable and maintain state-of-the-art technology and infrastructure and develop the skills of employees.

Statistics Canada has moved from primarily delivering data to also playing more of a stewardship role for data literacy, standards and methods, data sharing, and

the coordination of data flows.

[The 2023–2026 Data Strategy for the Federal Public Service](#)

lays out Statistics Canada's stewardship role in enabling data discovery, integration and reuse; developing an evergreen list of standards; transforming data into insights through data hubs; and promoting training in data literacy and analytical skills. This can only be truly successful if data requirements and funding are explicitly included upfront when planning federal government programs.

A key element of national data strategies is the different perspectives that come from bringing organizations together. This has been exemplified through successful partnerships with government departments and Indigenous communities.



# Recommendations

## Engagement and knowledge



### *Recommendation 1: Engage Canadians and policy makers in a modern national statistical system*

*Data literacy, new technologies and analytical capacity should be valued and developed among the general data user community, as well as public and private organizations. Sound statistical data are needed for Canadians and businesses to make informed decisions.*

The Chief Statistician of Canada should

- (i) invest further in data literacy to enable Canadians and policy makers to assess and use new types of statistical data
- (ii) promote informed public dialogue about the role of data in a digital economy and their importance for effective decision making.

The Minister of Innovation, Science and Industry should

- (iii) ensure that data literacy and analytic workshops and training that promote upskilling, such as that offered by Statistics Canada, are mandatory for public sector program managers and analysts.



## **Recommendation 2: Invest in data science and analytical skills**

*Developing and using statistical data today require new data science skills, including data visualisation, data coordination, data interpretation and analysis. Definitions of data, metadata and data systems are in flux as new generations of Canadians view and use information differently.*

The Chief Statistician of Canada should continue to

- (i) invest in training Statistics Canada staff to foster data science skills for developing and using new methods and data sources
- (ii) engage with partners in the effective and appropriate use of artificial intelligence for collecting and interpreting data and for monitoring the impact of programs.

The Minister of Innovation, Science and Industry should

- (iii) ensure that data science competencies and job descriptions within federal departments are developed in consultation with Statistics Canada.





## ***Recommendation 3: Develop innovative data flows***

*There should be greater investment by the federal government and other sectors in implementing and maintaining state-of-the-art platforms, software and communications technologies to enable and coordinate the timely collection of important data across jurisdictions to build a truly national data infrastructure.*

The Chief Statistician of Canada should continue to

- (i) develop state-of-the-art platforms, software and communications technologies to ensure that Statistics Canada remains a leader in modern statistical data development.

The Minister of Innovation, Science and Industry should

- (ii) work with the Treasury Board Secretariat to develop new mechanisms and sources of funding to support modernization that keeps pace with new technologies to ensure that Statistics Canada and other arms of government are not left behind
- (iii) ensure that new Government of Canada programs and federal agreements with partners have a data needs assessment for planning, delivering and evaluating programs that considers costs of data coordination, skills training and sustainable infrastructure
- (iv) ensure that any new data privacy and protection legislation and policies allow for the adoption of emerging data practices, while continuing to recognize the authority of Statistics Canada to collect data and coordinate data flows.



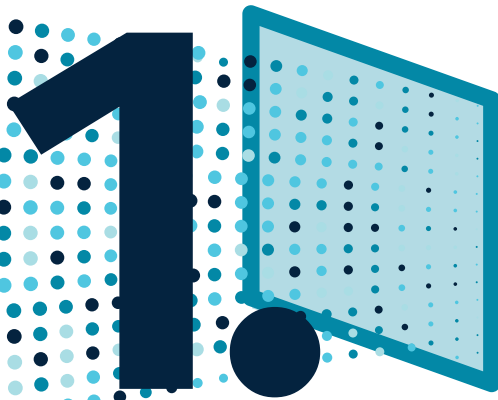
## **Recommendation 4: Recognize the role of data stewardship**

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*Statistics Canada has an important role to play in establishing data standards and methodologies, sharing data, and coordinating data flows. Statistical standards and methods are the foundation for coherent, high-quality national statistics.*

The Minister of Innovation, Science and Industry should

- (i) recognize and support Statistics Canada as a key data steward in establishing and leading partnerships for developing and coordinating statistical data flows at the federal level and in setting data and methodology standards nationwide
- (ii) ensure that new leadership at Statistics Canada continues to have a deep appreciation of the national statistical system, fosters meaningful dialogue with Canadians on why good data matter, maintains the trust that their data will be protected, and develops with partners from all sectors the statistical infrastructure and data flows so critical to addressing Canada's most pressing issues.



# Engagement and knowledge

## 1.1 Engage Canadians and policy makers in a modern national statistical system

Canadians are proud of their statistical system. Time and time again, they participate in and use

data from Statistics Canada's programs. They fiercely advocated to maintain the census in 2011, and 98% responded to the 2021 Census.<sup>ii</sup> People rely on the census to update the socioeconomic portrait of the

country and to provide planners with local information needed to build schools, roads and hospitals. In addition, Canadians have embraced the agency's use of modern technology and methods,



with 84% of households responding online to the most recent census. Statistics Canada is also giving many Canadians the option to complete the monthly Labour Force Survey online—two-thirds of respondents do so.

Canadians also contribute indirectly to the national statistical system with data they provide through administrative programs. Vital statistics and immigration and taxation data have long been used by Statistics Canada to produce population estimates and replace census and household survey questions.

At the same time, Statistics Canada is wrestling with lower response rates for its voluntary surveys. Its household surveys are becoming less viable as a sole method of collection, partly because of the difficulty of reaching Canadians at home and because of a saturation of requests for other surveys. The agency is not alone—statistical agencies around the world, as well as private research and analytics firms, are facing this challenge. As Statistics Canada looks to data from other sources, including administrative data, it is important that the agency communicate how these data are collected and used.

Business surveys are also experiencing problems, with companies overburdened by completing survey questionnaires. Statistics Canada's modernization efforts have included working with the business community to facilitate transfers of existing company records instead of filling out surveys and to develop alternate sources of data.

## Promote informed public dialogue on the role of data

Through A Data Story<sup>iii</sup> events held across the country, the Chief Statistician gives data presentations on key social and economic issues including housing, public safety and immigration. Helping people learn about how their government uses data to improve their lives is an important part of engaging Canadians. Statistics Canada has a responsibility to promote this dialogue through social media and its various web portals. Data providers and analytics firms also need to echo the message.

People are inundated daily with information. It can be a challenge to distinguish reliable data from all the figures and “facts” they see and hear. This can result in misinformation and misunderstandings about issues of importance to Canadians. Cases in point are the confusion around the cause and transmission of the COVID-19 virus during its early days and the extent of foreign home ownership.

Conflicting information from multiple sources can lead people to question the integrity of all information. Canadians need to be reassured that the data they provide to Statistics Canada benefit them and society, and that they will remain protected. The measures the agency takes to respect the

privacy of Canadians and ensure the confidentiality of their information while implementing new technologies are world-leading.

## Enhance data literacy

Data literacy and analytical skills should be valued within the public and private sectors, as well as within the general data user community.

Statistics Canada has a vital role to play in promoting and teaching these skills. The agency has developed a broad data literacy program to meet the diverse needs of data users. The [data literacy training](#) program is comprehensive and tailored to different levels of expertise. It also promotes public awareness of why official statistics matter and how they are being collected, stored and used.

The agency actively works with schools, communities and organizations to increase practical data literacy and numeracy skills that can be used in people's daily lives. Specialized workshops provide more technical courses for data scientists and analysts.

Statistics Canada reaches out to policy makers and businesses, to help them understand how technology and modernization are changing opportunities to collect, access and interpret data. The training leads to a better appreciation of the value of analysis when data from different perspectives are brought together. It also helps discern good data from questionable data.

However, many managers and analysts within the government lack knowledge and understanding of the role of data when planning programs, including the statistical infrastructure needed today to collect and house information. These public servants would benefit from data literacy and analytical skills training and workshops, such as those offered by Statistics Canada. The agency is presently

expanding its program to meet specific needs of government departments, and many public servants have already participated in pilot courses and workshops. Given the important role of data in federal programs, the Council feels that this training should be mandatory for all federal program managers and analysts. As well, the training should be in person to

promote dialogue on data sharing and data flows.

Program managers and analysts could also benefit from courses given in the private sector, such as *Readying Infrastructure and Data for a Digital Public Sector*, offered by INFONEX,<sup>iv</sup> a firm providing conferences and training to professionals in the public and private sectors.

## 1.2 Explain the concepts of value proposition and risk management

The terms “value proposition” and “risk management” are used to describe the rigorous process to responsibly collect and use statistical information. These are not concepts that come to mind easily for most Canadians, though they may intuitively appreciate their underlying principles.

The value of statistical information generally increases with the level of in-depth and cross-cutting detail captured. Risk management weighs the value of obtaining this level of detail against the privacy incursion and considers the participant, the data collector and the data user.

Value proposition and risk management are the basis of Statistics Canada’s programs and are also part of recent regulations in the European Union.<sup>v</sup> While the need to collect personal

information for the public good has always existed, the scope has intensified, driven by the societal need to better understand complex issues. For example, assessing quality of life requires considering



cross-cutting social, economic and environmental dimensions; each taken in isolation leads to an incomplete picture.

## Communicating value proposition and risk management

Statistics Canada's expertise in protecting the privacy of personal information is well recognized and sought internationally. However, if this is not effectively communicated to Canadians, there is a lost opportunity to establish and strengthen bonds of trust between them and Statistics Canada.

The Council (in its [2020 CSAC report](#)) and others have encouraged Statistics Canada to be more transparent on matters of privacy and confidentiality. This is essential to maintaining public trust. The agency must thus communicate the concepts of value proposition and risk management in more user-friendly language, including its methods and practices for collecting, using and storing data.

Statistics Canada's [Trust Centre](#) presents much of this information. However, the portal is not accessed much by citizens, who provide the agency with much of its data. The portal needs to be part of a multi-faceted communications program

that includes promoting data literacy and engaging the public in dialogue through social media and other venues. The agency's podcast episodes that go behind the data and its Reddit "Ask Me Anything" sessions for the Consumer Price Index are good examples of how this can be achieved, but more needs to be done.

## Proposed changes to Canada's data protection laws

In last year's [CSAC report](#), the Council examined the government's proposed changes to Canada's data protection laws. The Council welcomes these proposed revisions which enable

responsible data innovation in a digital and global economy. The Council again emphasizes that the legislation must endorse the role of data in securing the country's future. The legislation must also promote the need for the government to consider upfront the value proposition of data collection and use. It cannot erode Statistics Canada's ability to fulfill its mandate and meet the needs of Canadians.

The Council remains concerned about the lack of clarity in the proposed revisions to data protection laws around de-identified and anonymized data. Statistics Canada's contribution to regulations on de-identification is very important.



## 1.3 Invest in data science and analytical skills

Developing and using new forms of data require different skills and practices. Data scientists are using advanced analytics technologies, including machine learning and predictive modelling, to support the identification of trends, scrape data from unstructured web sources and solve problems. These technologies are employed by consulting firms, information companies, universities, banks, and information technology departments in the public and private sectors.

For statistical institutions like Statistics Canada, this requires a new way of thinking about how different forms of data relate to each other and how they contribute to a more complete understanding of societal issues. Methodologists and analysts need to continue to upskill and be trained to work with new types of data, such as satellite imagery, scanner data and environment samples. These modern methods and data sources must then be blended with time-tested methods and data in a statistically rigorous fashion.

As part of the federal data strategy, data science competencies and job descriptions within federal



departments should be developed in consultation with Statistics Canada. This would lead to more coherence as programs develop their data needs assessment.

Statistics Canada has made important investments in cloud technologies, data analytics as a service and real-time remote access to its data holdings by government researchers. Virtual data labs and new approaches, such as crowdsourcing, web panels and flash estimates, are paying dividends in addressing many data gaps. They are also connecting challenging public policy questions with data expertise and analytics.

Opportunities are lost when these skills are not engaged or

are underused. For example, Statistics Canada has experts in data visualisation with a focus primarily on communication. Yet data visualisation is a powerful tool for all aspects of data development, including exploration, collection, integration and analysis.

Exchanges between organizations can be a good way to share knowledge and experiences. For example, Statistics Canada initiated the Data Science Fellowship Program to build a strong data science capacity in the federal government by placing qualified data science experts in various government departments. Cross-sectoral and interdepartmental partnerships are also being created by sharing

leading-edge best practices in data analytics platforms, business intelligence, data management and big data. Statistics Canada has also established a partnership on machine learning with Mila, a Montréal-based academic research centre, with a community of over 1,000 researchers.

## Artificial intelligence

Statistical organizations need to consider the groundbreaking implications of artificial intelligence (AI) on the data they produce and on their operations. Improper use of AI can lead to an erosion of trust and disengagement of citizens.

The United Nations Economic Commission for Europe (UNECE) has recognized that machine learning holds great potential for statistical organizations.<sup>vi</sup> Its High-Level Group for the Modernisation of Official Statistics (HLG-MOS) has explored how statistics can be produced more efficiently by automating certain processes or helping staff to carry them out. AI also allows statistical organizations to use new types of data, such as data from social media and imagery.

On the international front, Statistics Canada does not take a back seat. It plays leadership roles in the HLG-MOS and the big data and data science expert groups that are identifying and addressing common challenges encountered when incorporating machine learning into the production

processes of organizations. The UNECE framework on the responsible use of AI for statistical purposes draws upon the experience of Statistics Canada.

Within Canada, the agency leads the [AI and Data Governance Standardization Collaborative](#), an initiative created by the Standards Council of Canada that brings together industry, government, Indigenous organizations, civil society, academic and research bodies, pan-Canadian organizations, and standards development organizations.

Machine learning and AI have been used at Statistics Canada for classifying products based on scanned descriptions, interpreting satellite images used in predicting crop yields, and identifying and estimating the size of greenhouses. This has reduced response burden for farmers and eliminated some agriculture surveys.

AI has also allowed Statistics Canada to improve the Consumer Price Index, a key measure of inflation, by incorporating retail scanner data and real-time website information. Point-of-sale data, or transaction data, are the highest-quality price data available, as they track actual prices paid by Canadians at the checkout counter.

The agency should consider other untapped applications of AI. For example, AI could offer more timely and consistent data vetting practices in Research Data Centres, allowing staff in the centres to focus on reviewing the more complex results.





# 2.0

## Data flows

### 2.1 Innovate to address data gaps

Today's society needs new types of data with greater frequency and granularity to address issues of top concern. For example, there is a lack of timely data to assess the devastating impacts of climate change on small and rural communities and to support sustainable adaptation options. This requires linking satellite data,

temperature sensor data, trends in weather and sociodemographic data. Accessing privately held data, such as sensor data, can be particularly challenging.

Almost every sector is asking for high-quality, timely data. Canadians are concerned with increases in the cost of food, housing and energy. Governments and businesses need



information to deal with changes in consumer and work habits. Of particular concern are important data gaps within the environment, cross-border trade, competitiveness, intellectual property and banking sectors. This includes data from financial institutions and data from commercial entities that are held by governments. The utility of these data diminishes significantly if they cannot be accessed.

There is a demand by public and non-government researchers for access to more detailed industry and commercial data. As Statistics Canada continues to modernize, it should look to methods and practices that would permit greater granularity of these data.

There is also a strong demand for data to support the development of healthy ecosystems; preserve natural capital; and support policies and legislation in key economic sectors, including industry and agriculture. In response, Statistics Canada recently developed the Census of Environment. The Council feels that this new program, with its complex data system, is ambitious and would benefit from further examination of how the agency can best contribute to the national environment data ecosystem. This includes building relationships with new types of partners that will provide different perspectives on what is needed. This also entails building on existing foundational datasets

to address important data gaps that would benefit from consistent funding.

The research community, echoed by the Council [in its CSAC 2020 report](#), has long advocated for remote access to Statistics Canada microdata. The successful pilot project providing remote access to government researchers is a step in the right direction. Progress on developing a virtual Research Data Centre accessible to all Canadian researchers is much slower. Creating a sustainable, secure non-government network requires new partnerships, funding and cloud computing approaches and should be pursued in a timely manner.

## 2.2 Develop new data flows across jurisdictions

### Data stewardship

A vast amount of data within the national statistical system are developed and maintained by various governments and Indigenous, local and private organizations.

The federal government should further recognize and support





Statistics Canada as a key national data steward in establishing and leading partnerships for developing and coordinating statistical data flows at the federal level and in setting data and methodology standards nationwide.

Statistics Canada has moved from primarily delivering data to also providing more services on data literacy, standards and methods, data sharing, and the coordination of data flows. Statistics Canada is well placed to do so, as it has in-depth knowledge of social, economic and environmental issues and can advise on data development in support of community and policy decisions.

New public and private data are being analysed in areas such as prices, transportation, housing, labour, agriculture, the environment, tourism and economic development. This includes the creation of data hubs that facilitate data access and sharing of data and ideas, and that foster communities of engagement. While these initiatives show great promise, many are in preliminary stages. It is important that these partnerships continue to be supported, as much more work remains to be done.

The Council feels that as the agency experiences a leadership transition, it is paramount that the new Chief Statistician have the skills and commitment to keep pace with innovation and change in the data ecosystem and promote the dialogue and relationships that are essential to fostering collaboration.

## Federal data flows

In its Budget 2022, the federal government recognized the benefits of departments collaborating on data methods and skills training. It followed up with the [2023–2026 Data Strategy for the Federal Public Service](#), which lays out the stewardship role of Statistics Canada. This includes enabling data discovery, integration and reuse; developing an evergreen list of standards; transforming data into insights through data hubs; and promoting training in data literacy and analytical skills.

This is most welcome, as many groups within departments have traditionally worked in silos, resulting in inefficiencies, higher costs and lost opportunities. Their projects with Statistics Canada are often too narrow in scope and rely on funding that is subject to departmental budget cuts. In these circumstances, it becomes very difficult to plan and implement holistic national statistical programs. For example, inconsistent and siloed federal funding has affected the agency's

ability to create time series for detailed energy production and consumption by province that match national statistics published by the International Energy Agency.

Through implementation of their Disaggregated Data Action Plan, Statistics Canada continues to make progress in addressing certain information gaps. More detailed data are now available on the lived experiences of diverse populations which support decision-making to address racism, inequalities, and other systemic barriers.

In a fiscally constrained environment, there is a need to prioritize data needs. The Council has previously advocated ([see CSAC 2022 report](#)) that holistic statistical data requirements and funding be explicitly included in the planning for all federal government programs. While departments are responsible for developing the data they need, they should do so in concert with other departments and non-governmental organizations (NGOs).

There should be greater investment by the federal government and other sectors in providing data science skills training and in

implementing and maintaining state-of-the-art platforms, software and communications technologies. Done appropriately, this will lead to program efficiencies and reduced costs. At the same time, this modernization comes with ongoing costs of unstructured data processing, data storage and systems maintenance that must be planned and resourced.

## Promising practices

The [Housing Statistics Portal](#), for example, is key to addressing the country's housing and affordability crises. Developed by Canada Mortgage and Housing Corporation in partnership with Statistics Canada, this data hub relies exclusively on administrative data collected from private and public data sources. In particular, it is filling in data gaps related to residential property ownership in Canada.

The new [BERDI](#) tool by the Canada Energy Regulator (CER) is transforming access to information collected for environmental and socioeconomic assessments of pipelines and powerlines. Much of the information had not been easily accessible to the public, journalists and researchers. BERDI makes data for 20 years of assessments easy to find, understand and study. In a separate project on Indigenous data sovereignty, the CER digitized and identified 50 years of oral participation from First Nations, Métis and Inuit nations and communities, including testimonies from Elders and Knowledge Keepers. This was done

with each of the groups to increase access, control and ownership of transcripts and audio files.

Other good initiatives include Statistics Canada's [Linkable Open Data Environment](#), a set of open databases providing metadata on buildings, health care facilities, educational facilities, recreational and sport facilities, cultural and art facilities, and greenhouses; the [Quality of Life Hub](#), where the agency brings together information for key indicators on the well-being of people in Canada; data on temporary foreign workers employed in the agriculture and food processing sectors, based on tax data and other alternative data sources, addressing a long-standing data gap;<sup>vii</sup> and the agency's [AgZero](#) initiative, using alternative data and advanced technologies to reduce response burden on farmers.

## Provincial and territorial data flows

Canadians increasingly live and work across jurisdictions, calling for a truly national system that allows for comparisons from coast to coast to coast. In its previous [CSAC reports](#), the Council highlighted barriers to collecting data across jurisdictions, such as a lack of timely, nationally consistent and disaggregated data.

With significant demands for new types of data on biodiversity, clean technology, sustainable agriculture and reduction in plastic waste, there needs to be more sharing

and integration of energy and environmental data from provincial and territorial governments, environmental NGOs, academic researchers, and the private sector.

When data are shared across jurisdictions, the ability to plan and evaluate the benefits of programs increases dramatically. Integrating data at the provincial and territorial level has added complexity when jurisdictions become siloed, and legislation and policies create barriers to data sharing. As detailed in previous reports, it has been next to impossible to develop national comparative data for some critical areas.

## Promising practices

The Council was encouraged by the [2023 Canada Health Transfer agreements](#), which included support for improving data flows and developing national indicators on health care and health care workers. Canadians demand a health care system that addresses issues such as availability of health practitioners and wait times. This can only be assessed through coordinated data across jurisdictions. Provinces and territories are also developing online applications to help health practitioners and patients more easily navigate the health care system and access medical information. The Council sees this as a promising set of initiatives with huge potential if this information can be coordinated across jurisdictions.

The geospatial [Community Fire Risk Reduction Dashboard](#) is a

pilot project between Statistics Canada and the Office of the Fire Commissioner for the province of British Columbia. It visually shows the level of neighbourhood fire risk using data from the census and the National Fire Information Database. Many users have recognized the value of this dashboard. Statistics Canada is now working with the Office of the Fire Marshal in Ontario to create a similar dashboard.

## Municipal and private sector data flows

Statistics Canada is a world leader in partnering with municipalities and the private sector to expand and enrich the quality of their combined information.

The Council has observed more collaboration among government and the data and analytics industry. Private sector firms are mining data from a wide variety of passive sources, such as data from device sensors connected with systems over the Internet. This work can add rich insight to data gaps identified by the government.

Mining phone movement data is an area of significant investment by private sector data firms all over the world. Statistics Canada's innovation teams are partnering with reliable researchers in the private sector to ensure that this innovative work involves methods that ensure privacy, accuracy, governance and transparency.



Despite some irresponsible companies that give data producers in the private sector a bad name, many companies not only comply with data governance rules but also make high-quality statistical information available.

## Promising practices

Statistics Canada works with consumer credit reporting agencies—for example, [Equifax](#) and [TransUnion](#)—that offer services such as credit monitoring and fraud prevention based on data they obtain from financial institutions. When the data are integrated with demographic data and other sources of payment history they become important for the public good. These companies offer data that could help small businesses access capital and provide credit records for groups with limited financial tracking, such as immigrants, Indigenous people and youth.

As part of an ongoing partnership with the Federation of Canadian Municipalities, Statistics Canada has created the [Centre for Municipal and Local Data](#). This portal integrates municipal census data with statistics on housing, health and crime, and an experimental dashboard containing municipal financial and socioeconomic data.

Canada's business landscape is at a critical juncture, with the economy adjusting to higher interest rates and an economic slowdown or possible recession. The Canadian Chamber of Commerce's collaborative initiative to harness existing data and build the [Business Data Lab](#) represents a good practice. Working with Statistics Canada and benefiting from federal funding, it brings together data from a variety of sources to track evolving market conditions. This provides governments, business associations and entrepreneurs with critical information to help them make better decisions, improve their performance and capitalize on business growth opportunities.

Statistics Canada has benefited from sharing innovative research and development with private sector analytics firms such as [Environics Analytics](#). Regular exchanges between these two organizations have identified data gaps from the business community and paths for collaboration between Statistics Canada and businesses. Their work together includes assessing the feasibility of using phone movement data and other administrative data to produce more timely estimates of tourism patterns. Exploring these movement data has also led to a better understanding of back-to-work patterns related to the COVID-19 pandemic and of retail or main street recovery in different markets.

## Indigenous data flows

A key element of national data strategies is the different perspectives that come from bringing together data users and potential data providers. This has been exemplified through successful partnerships with government departments and Indigenous communities.

These programs are successful with in-person meetings and an engagement based on a culture of awareness and respect that embraces the traditional wisdom of Indigenous councils and community members. They are models of mutual and ongoing respect that should be considered and adopted by other sectors.

The challenges encountered reflect those of other such initiatives: the government's ownership of the intellectual property co-developed with Indigenous peoples and the lack of resources to conduct these studies on location. There is also a lack of ongoing resources from many partners to build and maintain dynamic data portals.

## Promising practices

A notable collaborative project was recently undertaken in the Northwest Territories to better understand climate change and its effects on communities. Co-led by the Geological Survey of Canada (Natural Resources Canada) and Carleton University, the project brought together First Nations, Métis and Inuit organizations; industry; national and international universities; the Government of Northwest Territories; and federal departments. The work entailed developing new geoscience tools for assessing environmental impacts in the Slave Geological Province, with

a focus on areas around Yellowknife and Courageous Lake. Over the course of the project, there was a meeting of traditional and Western knowledges. The components based on traditional knowledge were led by Indigenous partners.

Canada is at risk from major earthquakes, particularly in British Columbia, but also in Ontario and Quebec. Natural Resources Canada's Earthquake Early Warning program is another model project to be officially launched next year. In British Columbia, many of the people at risk are on Indigenous territory. From the start of the project, there has been mutual engagement between Natural Resources Canada, the British Columbia government, Coastal First Nations (CFN) and the Council of the Haida Nation on the project's purpose, scope and benefit to communities. This includes funding through a grants and contributions program and installation of "extended network" stations in CFN communities, along with the development of technical capacity in those communities.



## 2.3 Ensure that statistical standards form the basis of data sharing and analysis

Statistical standards and methods are the foundation for coherent, high-quality national statistics, which need to continually adapt to the changing technical landscape. The role of national standards needs to be resonated widely and loudly, particularly in an era of misinformation and disinformation.

Statistics Canada has been working with the federal government to ensure that standards reflect a modern statistical environment. The agency is working closely with the Standards Council of Canada on the AI and Data Governance Standardization Collaborative. Statistics Canada is also co-leading, with the Treasury Board Secretariat, the renewed federal public service data strategy.

The standards Statistics Canada uses to produce information on major facets of Canadian society and the economy are also available to users to organize and classify

their own data holdings. This facilitates the access, sharing and linking of data. A lack of statistical standards has data quality implications, including for the ability to adequately measure emerging trends and to compare data nationally and across regions.

Dealing with variations in concepts and definitions has long challenged survey data analysts. For example, studies of newcomers to Canada can be based on the concepts of landed immigrant status, foreign-born, non-permanent residency, visitor status, temporary visa holder

status, place of birth, population group (visible minority), and ethnic or ancestral origin. Each can lead to different interpretations of ethnocultural diversity, affecting analysis and comparisons of results from different sources.

As the racialized population in Canada grows and as the country welcomes an unprecedented number of newcomers, the term “visible minority” used in Employment Equity legislation needs to be modernized to reflect how Canadians understand race.



# 3.

## Final word

Canada's national statistical system is built on mutual relations and the sharing of information and expertise. It must be a key component of public and private sector data strategies to support economic recovery and to ensure Canada's prosperity and well-being. Modernization efforts over the last few years need to continue and even expand to tackle new data needs. To achieve this, future leaders of Statistics Canada must continue to have strong data science and analytical skills, as well as stewardship, to build relations and promote data flows. The cost of programs based on poor or incomplete data can be enormous. Even in fiscally difficult

times, priority has to be given to developing critical statistical infrastructure and data flows with partners from all sectors.





# Endnotes

- <sup>i</sup> The Canadian national statistical system is the group of public and private organizations within the country that collect, process and disseminate statistics for the benefit of its citizens. Providers of official statistics include Statistics Canada, the central bank, provincial and territorial statistical offices, and the Canadian Institute for Health Information. Stakeholders include researchers and training institutes; data producers; and data users from the public, Indigenous, non-governmental and private sectors. Presently, organizations in both the public and private sectors are driving the use of digital information, as well as generating new data at unprecedented rates.
- <sup>ii</sup> Statistics Canada, <https://www12.statcan.gc.ca/census-recensement/2021/ref/response-rates-eng.cfm>.
- <sup>iii</sup> Statistics Canada, A Data Story, <https://www.statcan.gc.ca/en/events/data-story>
- <sup>iv</sup> INFONEX Professional Development, <https://infonex.com>
- <sup>v</sup> European Union *Data Governance Act* and *Data Act*, <https://digital-strategy.ec.europa.eu/en/policies/data-governance-act>.
- <sup>vi</sup> UNECE, <https://unece.org/statistics/publications/machine-learning-official-statistics>.
- <sup>vii</sup> <https://www150.statcan.gc.ca/n1/daily-quotidien/230413/dq230413b-eng.htm>.

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