

STATISTICS CANADA DATA STRATEGY

Delivering insight through
data for a better Canada

2019 to 2022



Statistics
Canada

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Canada

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A message from the Chief Statistician of Canada

In 2018, Statistics Canada marked its centennial: 100 years of service in managing confidential data from Canadians and using its expertise to transform these data into meaningful insights on Canada's economy, society and environment. The agency's activities have always been driven by sound and robust data strategies to address emerging needs while maintaining the trust and confidentiality of Canadians.

Statistics Canada has a mandate to promote and develop integrated social, economic and environmental statistics pertaining to Canadians, the provinces and the territories. This mandate includes collaborating with government departments and agencies to collect, compile and publish statistical information, including information derived from departmental activities; to promote integration; and to avoid duplication of the information collected. The agency provides unbiased, high-quality data that are integral to the well-functioning of society and a statistical framework upon which the nation makes decisions.

In Canada, and globally, data and the digital economy are driving innovation, along with economic and social opportunity. Businesses, governments and citizens are seeing an explosion in the volume of data and data analytics technologies. But more data does not automatically result in greater knowledge and increased prosperity and social inclusion in Canada. This new data environment poses real challenges to governments and citizens. For example, technologies such as artificial intelligence (AI) and machine learning (ML) are reshaping analysis and have the potential to change the basis of decision making. The advent of "alternative facts"

from dubious sources and a growing disregard for evidence and analysis in political and civil discourse all emphasize the need for greater data literacy and access to objective evidence for all Canadians. Statistics Canada recognizes that as institutions evolve in the midst of a data revolution, and as citizens are bombarded with large volumes of data from a variety of sources, the need for trusted, high quality data and competent data stewardship has never been greater.

Capitalizing on the data revolution will require a number of key enablers, including a modern, adaptive and agile statistical agency. Statistics Canada's data strategy is embedded in its modernization agenda. The agency is actively researching, developing, and implementing solutions to provide Canadians and decision-makers with increased access to high-quality, relevant and timely information on issues affecting our society using methods that preserve privacy, confidentiality and security; to provide expertise to partners, users and citizens; to provide trusted data insights and standards; to decrease response burden and capitalize on existing administrative data (non-survey based); to use innovative data collection approaches, such as crowdsourcing; and to expand and leverage innovative partnerships. Statistics Canada must continue to work closely with partners and stakeholders to remove barriers to data sharing, including technical, cultural and legislative.

Over the past year, Statistics Canada's modernization included investments in data infrastructure (for the development of the Data Analytics as a Service platform), improved gender-based analysis, and statistical capacity building for Indigenous peoples.

Statistics Canada's ongoing modernization and expertise as a world-leading data steward will provide great value to Canadians. In particular, Statistics Canada is committed to:

- improving transparency and openness;
- continuing the development of innovative methods to preserve privacy, confidentiality and security;
- increasing access to data and microdata to create information that drives innovation, inclusion and drives insights;
- increasing data literacy and statistical capacity building; and
- leading and fostering the strengthening of the national statistical system.

The Statistics Canada Data Strategy (SCDS) will be an evergreen document to provide a course of action for managing and leveraging the agency's data assets to ensure their optimal use and value while maintaining public trust. As the nation's trusted provider of high-quality data and information to support evidence-based policy and decision-making, the SCDS also naturally extends into the agency's course of action for supporting and providing expertise on data to other government organizations (federal, provincial, and territorial), non-government organizations, the private sector, academia, and other national and international communities. Statistics Canada coordinates the national statistical system (NSS) working with provinces, territories, municipalities, the private sector and non-government organizations. Statistics Canada seeks the expertise and counsel of many advisory groups and has a comprehensive and well-established system of committees to ensure oversight and robustness of the system.

This document provides a roadmap for how Statistics Canada will continue to govern and manage its valuable data assets as part of its modernization agenda and in alignment with and response to other federal government strategies and initiatives including the Data Strategy for the Federal Public Service, Canada's 2018-2020 National Action Plan on Open Government, and the Treasury Board Secretariat Digital Operations Strategic Plan: 2018-2022.

Finally, I would like to thank Statistics Canada employees for drawing on their collective expertise to guide the creation of this strategy. The SCDS will ensure that core functions of the agency, in the form of strategic data capabilities, will continue to make data more accessible, drive innovation, and ensure evidence-based decisions in support of an inclusive and data-driven economy and society while maintaining public trust.



Anil Arora
Chief Statistician of Canada

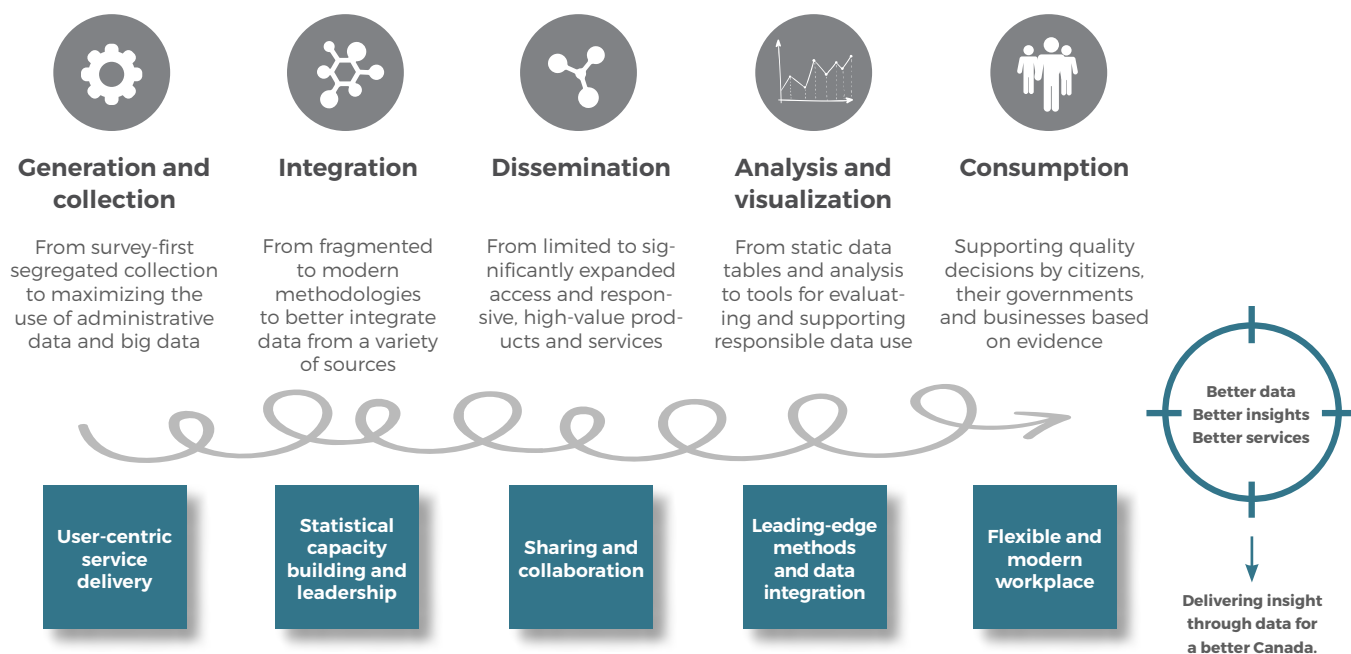
Summary

Over the last 100 years Statistics Canada has evolved from a centralized statistical agency producing data tables on the state of Canadian economy and society to a modern, dynamic organization producing insights which result in data-driven policy decisions and better services for Canadians. As Canada's national statistical office, Statistics Canada has a clear vision: to deliver insight through data for a better Canada. The agency's role in a whole-of-government approach to data stewardship and data management is to ensure the availability of high-quality, trusted data to inform government programs and services, while safeguarding information and protecting the privacy of Canadians. Further, it is also the agency's role to help public servants and Canadians become more data savvy. Canadians need high-quality, insightful, accessible and timely data. The agency is committed to leading the integration of statistics and strengthening the national statistical system by enabling the strategic use of data and delivering data insights through innovative collaborations and partnerships.

Statistics Canada is achieving its vision through its modernization effort, which was initiated in 2017. Modernizing Statistics Canada's workplace culture and its approach to collecting and producing statistics is resulting in better and faster access for Canadians to the statistical products they need. Specifically, the goals of modernization are to:

- produce more timely and responsive statistics—ensure Canadians have the data they need when they need them;
- develop and release more granular statistics to ensure Canadians have the detailed information they need to make the best possible decisions;
- raise awareness about Statistics Canada's data and provide seamless secure access;
- provide leadership and expertise in strengthening the national statistical system—improve and increase alignment and collaboration with counterparts at all levels of government and within the private sector and regulatory bodies to create a holistic and integrated approach to data collection, sharing, analysis and use while maintaining public trust.

Statistics Canada's modernization agenda is built on five pillars which align with the agency's mission ("serving Canada with high-quality statistical information that matters"), vision ("delivering insight through data for a better Canada") and values (trustworthy, purposeful, caring and inclusive, and curious and always learning). These pillars provide the foundation for the Statistics Canada Data Strategy (SCDS). They respond to the ever-changing data landscape and to users' and stakeholders' requirements for more data, provided faster, and made available in multiple formats and from multiple access points. The modernization agenda aims to find the right balance between openness and transparency while protecting privacy and confidentiality.



Statistics Canada's reputation as the country's premier, trusted data provider, and the agency's recognized expertise as a data steward, will further drive the modernization agenda toward an enterprise-wide (whole-of-government) approach to strategic data management with a focus on collaborative approaches to providing data and insights.

Strategic Collaboration on Energy Statistics

Statistics Canada is currently working in partnership with Natural Resources Canada on the creation of an independent, one-stop website designed to provide Canadians with comprehensive energy information to support Canada's transition to a low-carbon energy future. The website will provide Canadians with free access to independent, credible information and expert analyses. This will help Canadians make important decisions for their businesses, their communities and the environment. The website will be hosted by Statistics Canada and will be guided by a joint federal-provincial-territorial steering committee and will seek advice from Canadians, Indigenous peoples, industry, academics and municipalities.

Gender, Diversity and Inclusion Statistics

Statistic Canada is enhancing its gender, diversity and inclusion statistics to support the implementation of Gender-Based Analysis Plus (GBA+) across the Government of Canada. The agency has three key objectives in this area:

- Regular reporting to Canadians
- Generating new information to address data gaps
- Building statistical capacity by sharing and collaborating with new and existing partners

The agency has also established a public-facing hub to support evidence-based policy development and decision-making within the federal government and beyond. The hub is a one-stop shop, linking users to data tables and research relevant to GBA+, gender results framework indicators, Sustainable Development Goals data, and useful national and international resources.

The SCDS has been organized along five strategic data capabilities and four sub-capabilities under data stewardship. The data stewardship capabilities provide the enabling infrastructure for achieving the other core capabilities. These five capabilities provide the foundation to ensure that the agency remains an independent and effective leader of the national statistical system, and a global leader in official statistics.

The five strategic data capabilities are:

- data governance
- data stewardship, including:
 - > data discovery
 - > data digitalization
 - > data interoperability
 - > data management
- data resources
- data trust framework
- data leadership

Each strategic data capability also includes short-term activities (what we are doing now), medium-term activities (what will we do next) and future activities (what will be the ideal mature state); as well as expected outcomes towards improved services to Canadians and increased evidence-informed decision making. Each strategic data capability will also require

performance measurement criteria aligned to modernization. Performance criteria will be developed directly with each program area and will be integral to the next steps in the creation of a Data Stewardship Strategic Engagement Plan.

The importance of data stewardship in a “whole-of-government” approach

Statistics Canada’s role in a whole-of-government approach to data stewardship is to ensure the availability of high-quality, trusted data to inform government programs and services. Statistics Canada brings quality, relevancy and expertise, in the form of standards and harmonized concepts, to the management of government of Canada data assets. The agency is committed to enabling the strategic use of data and delivering data insights to inform policy decisions which provide better services to Canadians.

Activities at a glance

Strategic Data Capability	Short-term activities	Medium-term activities	Future state
Governance	Strategically realign to respond to ever-evolving data ecosystem and align with modernization agenda.	Formalize program data stewards. Increase intergovernmental leadership and synergies on data governance.	Develop well-established roles and responsibilities relating to enterprise-wide data governance and stewardship.
Discovery	Identify and increasingly gain access to administrative data sources for statistical purposes—master data are catalogued and available for use.	Establish and maintain ongoing, mutually beneficial relationships with data providers—ongoing data use monitoring offers BI insights to most-used and least-used data.	Collaborate with other government organizations (including the provinces, the territories and local area governments) to enhance the usefulness of administrative data for statistical purposes and reduce duplication.
Digitalization	Modernize IT infrastructure, ensure adoption of business-led and technology-enabled solutions, and ensure alignment.	Ensure alignment to IM vision, including moving to cloud-native storage and processing and role and policy based access control and data visualization.	Implement trusted digital identities and state of the art encryption. Implement data analytics as a service and remote data ingestion. Implement secure multi-party computing and privacy-preserving record sharing.

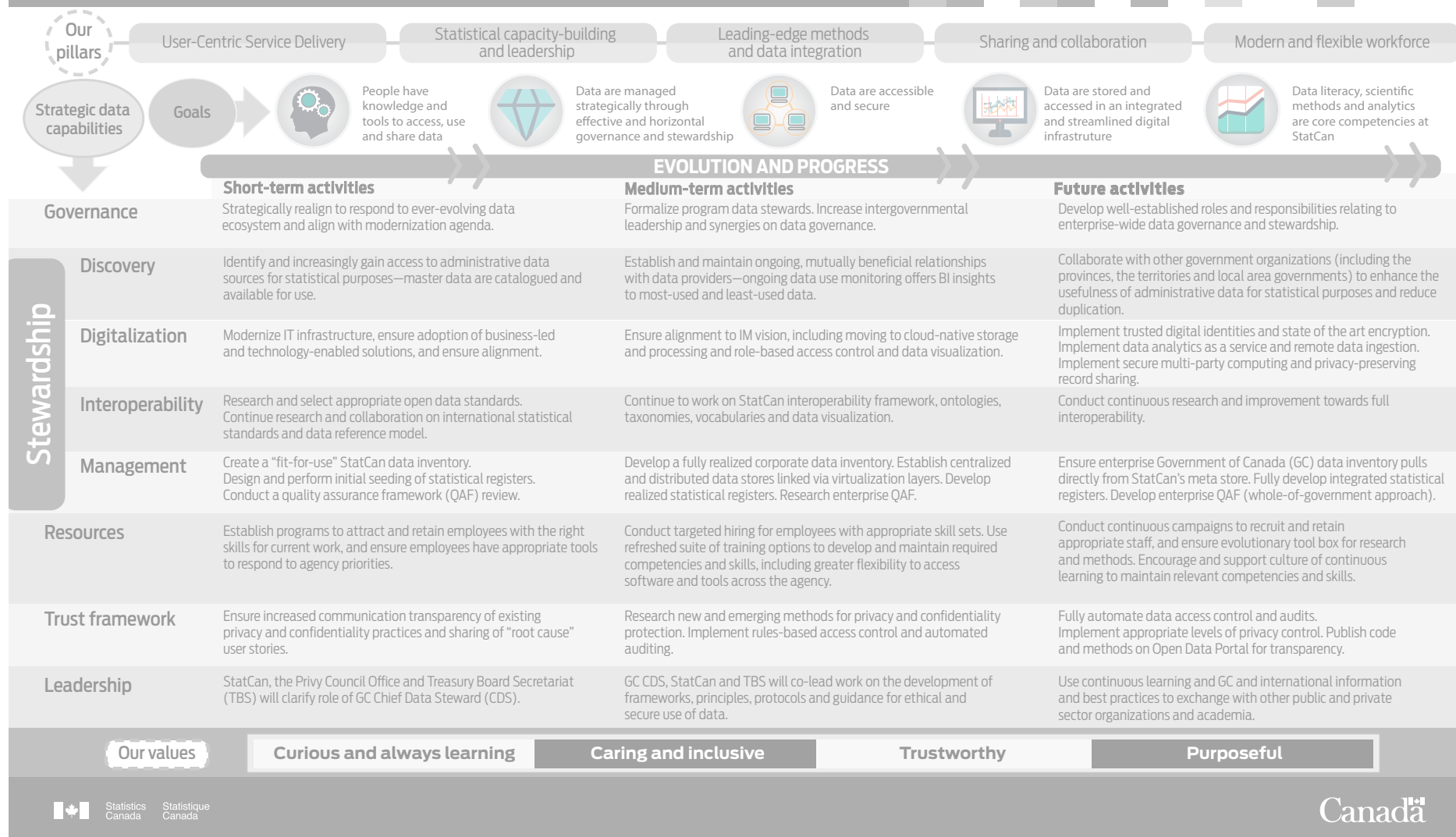
Strategic Data Capability	Short-term activities	Medium-term activities	Future state
Interoperability	Research and select appropriate open data standards. Continue research and collaboration on international statistical standards and data reference models.	Continue to work on StatCan interoperability framework, ontologies, taxonomies, vocabularies and data visualization.	Conduct continuous research and improvement toward full interoperability.
Management	<p>Create a “fit-for-use” StatCan data inventory.</p> <p>Design and perform initial seeding of statistical registers.</p> <p>Conduct a quality assurance framework (QAF) review.</p>	<p>Develop a fully realized corporate data inventory.</p> <p>Establish centralized and distributed data stores linked via virtualization layers. Develop realized statistical registers.</p> <p>Research enterprise QAF.</p>	Ensure enterprise Government of Canada (GC) data inventory pulls directly from StatCan’s meta store. Fully develop integrated statistical registers. Develop enterprise QAF (whole-of-government approach).
Resources	Establish programs to attract and retain employees with the right skills for current work, and ensure employees have appropriate tools to respond to agency priorities.	Conduct targeted hiring for employees with appropriate skill sets. Use refreshed suite of training options to develop and maintain required competencies and skills, including greater flexibility to access software and tools across the agency.	Conduct continuous campaigns to recruit and retain appropriate staff, and ensure evolutionary tool box for research and methods. Encourage and support culture of continuous learning to maintain relevant competencies and skills.

Strategic Data Capability	Short-term activities	Medium-term activities	Future state
Trust framework	Ensure increased communication transparency of existing privacy and confidentiality practices and sharing of “root cause” user stories.	Research new and emerging methods for privacy and confidentiality protection. Implement role and policy based access control and automated auditing.	Fully automate data access control and audits. Implement appropriate levels of privacy control. Publish code and methods on Open Data Portal for transparency.
Leadership	StatCan, Privy Council Office and Treasury Board Secretariat (TBS) will clarify role of GC Chief Data Steward (CDS).	GC CDS, StatCan and TBS will co-lead work on the development of frameworks, principles, protocols and guidance for ethical and secure use of data.	Use continuous learning and GC and international information and best practices to exchange with other public and private sector organizations and academia.

Statistics Canada Data Strategy Framework

Statistics Canada Data Strategy

Our vision: Delivering insight through data for a better Canada



Drivers, challenges and goals

Drivers

The greatest driver of the SCDS is the changing requirements for data and information of Canadians, Canadian businesses and Canadian institutions. Canadians want an authoritative source of information about what is important to them – relevant information and insights which respond to the increasingly complex economy and society. The legalization of cannabis, the opioid crisis, and the effect of foreign ownership on property values are some recent examples. Statistics Canada like many other National Statistical Offices (NSOs) around the world is responding to this need by reshaping its business model, building new networks and expertise, and devising new ways of unlocking the value of data for public good.

Challenges

The Data Strategy Roadmap for the Federal Public Service (DSFPS) included details on challenges faced by Government of Canada (GC) organizations:

- Absence of horizontal governance for strategic direction on data issues
- Lack of data literacy and cultural reticence to break silos
- Lack of adequate digital infrastructure and a complex rules framework
- Challenge of acquiring, governing, and managing large volumes of disparate data

Statistics Canada faces similar challenges. The agency modernization agenda is addressing these challenges through digital transformation

in the form of IT modernization, the move to a broader use of administrative and alternative data sources, and fostering collaboration and partnerships with external partners including other NSOs.

Goals

The goals of the SCDS are to ensure that data are discoverable, accessible, interoperable, reusable, reproducible and open. These goals are realized through the following guiding principles:

- People have knowledge and tools to access, use and share data.
- Data are managed strategically through effective and horizontal governance and stewardship.
- Data are accessible and secure.
- Data are stored and accessed in an integrated and streamlined environment with modern digital infrastructure.
- Data literacy, a focus on modern scientific methods and analytical capabilities continue to be core competencies at Statistics Canada.

The SCDS is driven by the evolving and changing data and information requirements of Canadians, responds to challenges faced by GC organizations, including those detailed in the Data Strategy for the Federal Public Service, and will be realized through the activities listed under the key strategic data capabilities in this report.

Data governance

Statistics Canada's Data Strategy (SCDS) is aligned with, and in many cases supports or enables, the commitments of various federal government strategies such as the Data Strategy for the Federal Public Service (DSFPS). The SCDS ensures that Statistics Canada's data initiatives and priorities follow a common method and structure that is repeatable, thus ensuring efficient oversight, implementation, measurement and communication throughout the agency as well as the built-in potential to scale them across the enterprise if and when needed.

Statistics Canada's governance framework includes a policy suite (policies, directives, guidelines) and an organizational structure which includes accountabilities for its mandate and priorities. Statistics Canada's internal governance structure, with designated accountabilities for decision making around data, is documented in the roles and responsibilities sections of the [Directive on the Management of Statistical Microdata Files](#) and the [Directive on the Management of Aggregate Statistics](#), and in the mandates of the senior management committees, including the Information Management Committee, the Microdata Access Management Committee, the Microdata Review and Release Committee, the Methods and Standards Committee, the Methods, Standards and Quality Committee, and the Communications and Dissemination Committee.

Statistics Canada Executive Management Board is divided into four committees, each with a clear mandate to facilitate responsible experimentation, innovation and action:

- the Strategic Management Committee
- the Modernization Management Committee
- the Corporate Planning Committee
- the Operations Committee

Statistics Canada has also designated several key executives with roles and accountabilities for data. These include Chief Information Officer, Chief Data Officer, Chief Technology Officer, Chief Financial Officer, Chief Procurement Officer, Chief Security Officer, Chief Privacy Officer and Chief Talent Officer.

Additionally, Statistics Canada seeks the expertise and counsel of many advisory groups and consultative committees, including the recently formed Advisory Council on the Modernization of Microdata Access and the Canadian Statistics Advisory Council whose mandate is to advise on the statistical system's overall quality, including the relevance, accuracy, accessibility and timeliness of its data.

Current agency governance practices ensure that agency programs and policies promote holistic data decisions and provide strategic direction aligned to modernization. Moving forward, Statistics Canada's governance structure must ensure that it is strategically aligned to better serve clients and citizens, and to reduce barriers and increase collaboration within the agency. Statistics Canada must work collectively to respond to initiatives and emerging needs,

such as cloud adoption, microdata access, data science and engagement with Canadians. Creating synergies and collaborating horizontally across the agency in order to break down silos is vital. The organizational structure must be designed to turn vertical accountabilities into horizontal collaborations to ensure integration of cross-cutting activities. Statistics Canada's organizational structure must also ensure that roles and responsibilities include the following:

- conducting strategic planning to increase stakeholder engagement and outreach
- expanding the use of data visualizations, developing integrated portals, and creating horizontal storylines to promote responsive, comprehensive and collaborative analytical insights
- providing a full continuum of access from public dissemination to microdata integration across the agency
- optimizing emerging technological opportunities, including the continued digitalization of data to provide access to new data sources
- accessing and leveraging digital technologies such as the cloud, artificial intelligence (AI) and machine learning
- accessing powerful tools to effectively manage the volume, velocity and variety of data, including enhancing focus on data science, training and innovation
- focusing on cyber security and remaining vigilant to mitigate internal and external threats to the security of personal information
- enhancing responsiveness to emerging data requirements by recognizing the inherent horizontality of these issues and the agency's unique position as an integrator.

Organizing for Success

Statistics Canada reorganized its structure to give greater focus by placing staff under two new fields. The new Strategic Engagement and Communications Field will ensure that Canadians think of Statistics Canada when they need information. This new field's driving mandate is to ensure that "engagement is about user experience and connecting people with products and services."

The newly created Digital Solutions Field will ensure that modern and digital solutions are leveraged to solve business problems. The field will also ensure alignment with the recently released Treasury Board Secretariat (TBS) Policy on Service and Digital, and the TBS cloud strategy.

Short-term activities

- Realign and organize the agency in response to the evolving data ecosystem; this includes realigning senior management committees as needed.
- Formalize key executive responsibilities, including roles of CDO and CIO and supporting organizational units.
- Modernize Statistics Canada's Information Management (IM) Vision to ensure IM/IT alignment toward digital solutions.

Medium-term activities

- Formalize data stewards for each program.
- Increase intergovernmental leadership and synergies on data governance by co-chairing the Data Governance Working Group under the Enterprise Data Community of Practice.

Future activities

- Develop well-established roles and responsibilities relating to enterprise-wide data governance and stewardship.

Expected outcomes

- Increased consistency and confidence in decision making for requirements of the NSS.
- Better enabled planning and the minimizing or eliminating of redundant work and processes.
- Aligned accountabilities and performance measures for data and information.



Statistics Canada’s governance structure must ensure that it is strategically aligned to better serve clients and citizens.



Data stewardship

Data stewardship is the management and oversight of data assets to ensure they are of high quality, easily accessible and used appropriately in a consistent manner. Data stewardship is a business function that ensures alignment between business and information technology (IT) so that data assets are properly managed throughout their lifecycle. This includes ensuring that data are used efficiently and in a way that addresses privacy preservation, confidentiality and security requirements. Data stewardship is a key function of Statistics Canada and includes data discovery, digitalization, interoperability and management; these operational and tactical capabilities enable all other data capabilities that form part of the SCDS.

Data discovery

Statistics Canada is currently modernizing its statistical programs to respond to a rapidly changing and increasingly complex economy and society, a proliferation of data and providers, and increased user expectations for “real-time” and micro-detailed data.

Statistics Canada’s modernization includes an administrative-data-first agenda, an environment where data and insights already present in the data ecosystem are leveraged before surveys or other collection methods are used. This includes creating strategic partnerships with other organizations and researching and discovering data inputs that can be used by statistical programs, such as administrative data, open data, found data, commercial data, crowdsourced data and web-scraped data, while respecting privacy and maintaining public trust.

Modern Data Collection

October, 2018 the production and sale of cannabis was legalized for non-medical purposes. To prepare for this momentous change, Statistics Canada launched two important initiatives, aimed at understanding the cost of and frequency of cannabis usage in Canada and to be able to monitor changes in behaviour as a result of legalization. Before legalization, Statistics Canada launched a crowdsourcing application called StatsCannabis that included questions on cannabis prices, location, consumption, and quantity purchased. To supplement the crowdsourcing information, the National Cannabis Survey (NCS) went into collection in February of 2018 with the results published on a quarterly basis since April 2018. After legalization, Statistics Canada updated the NCS content to track additional changes in consumer behaviours. These updates included new questions on the source of supply (legal or illegal) and first-time use. The National Cannabis Survey was conducted as part of Statistics Canada’s ‘RapidStats’ program – a new survey model aimed at improving timeliness and in response to emerging issues. The complementary cannabis pricing data collected through the crowdsourcing app were released (with a data quality note) in the first quarter of 2019.

Statistics Canada is committed to the privacy, confidentiality and protection of data and information pertaining to Canadians, Canadian businesses and Canadian institutions. Current data acquisition research efforts have been directed at ensuring that Statistics Canada brings in the right data and that the data obtained is proportional and effective to the need for the data, having considered alternatives.

A New Framework

Statistics Canada is ensuring that privacy protection methods and protocols continue to evolve as new data sources with varying levels of sensitivity emerge. Current efforts are focused on creating a necessity and proportionality framework. The framework is being developed to ensure increasing transparency in the data acquisition process, to provide stronger justification (necessity) for data acquisition, and to be more explicit about the efforts used to gather data in a manner that is both efficient and proportional to its necessity and sensitivity. This includes ensuring that necessity (requirement for data or information) is well-defined; applying the scientific approach and a series of checkpoints on sensitivity, ethics and proportionality (quality, sample size, content and risk mitigation); considering alternative methods; and requiring a privacy impact assessment and communication throughout the process to ensure transparency.

The agency must also ensure it continues to have the appropriate skills and tools to continue on the data discovery journey. Statistics Canada has responded to this challenge by developing tools, templates and communications to streamline the process, including an Administrative Data Inventory, an administrative data handbook, updated policy instruments and common templates for acquisition agreements.

The first phase of modernization at Statistics Canada included the implementation of four pathfinder projects which helped guide modernization, engage with stakeholders, consult with users, and implement leading-edge tools and methods to produce relevant, high-quality statistics. Over the last several years, efforts have been concentrated on discovering and acquiring administrative data files that directly feed the pathfinder projects: Measuring Cannabis, Transition to a Low-carbon Economy (Clean

Technology), Measuring Growth in International Visitors to Canada, and the Canadian Housing Statistics Program. These pathfinder projects are providing lessons learned for the broader modernization plan at Statistics Canada. Specifically, lessons learned in acquiring these new data sources will be leveraged as the agency continues to pursue its administrative-data-first agenda.

Filling the Gap

The Canadian Housing Statistics Program (CHSP), a joint program between Statistics Canada and the Canada Mortgage and Housing Corporation (CMHC), launched in 2017 and provides information on residential property ownership in Canada. This framework relies exclusively on administrative data collected from private and public data sources. This information is used by Canadians in a number of ways, including by policy makers to design programs that answer economic and societal needs, by academics to drive the creation of new knowledge, and by businesses and individuals with interest in the real estate market.

The program first released insights on non-resident ownership for Toronto and Vancouver in late 2017, and when fully completed, the program will provide comprehensive data on housing ownership and financial characteristics at the sub census metropolitan area (CMA). The program is filling data gaps related to housing in the measurement of foreign-buyer activity, something that had previously been unmeasurable using traditional methods.

Statistics Canada is also building capacity in the areas of negotiation and outreach, particularly as they relate to building strategic partnerships and win-win relationships with data and information providers. To ensure transparency, the agency is developing communications related to the acquisition, treatment and use of administrative data files by Statistics Canada.

Data-driven Partnerships

Statistics Canada is in the process of developing a Northern Data Strategy to more effectively coordinate a growing number of requests for northern data. The Northern Data Strategy will develop a sustainable way to produce statistics for each of the territories in partnership with the statistical focal points in the North. To do this a Northern Data Steering Committee and four sub-committees (Data Needs, Gatekeeping, Data Transformation and Indigenous Lens) were created to address the challenges of high response burden in the north, insufficient granularity of data, numerous data gaps and high collection costs. Working with the territories, key federal partners and Indigenous organizations, innovative data strategies will be developed using modern methods to exploit alternative data and to undertake surveys when no administrative data are available.

Building Statistical Capacity

Statistics Canada's is currently directing activities towards engagement with national indigenous organizations and providing statistical capacity building grounded in the needs of indigenous peoples. Many indigenous organizations and communities are requesting access to and ownership of relevant data to develop policies, deliver services, tell their own stories and sustain their own statistical capacity. The Agency is exploring partnerships to support collection, analysis and dissemination in the North and in indigenous communities.

The Project for the Regional Advancement of Statistics in the Caribbean (PRASC) is Statistics Canada's largest technical assistance project to date. Since the project launched in 2015, the agency has been providing technical assistance and enhancing statistical capacity in 14 Caribbean countries. PRASC focuses on statistical development in four major areas: national accounts, statistical infrastructure for business and household surveys, and communications and dissemination. The PRASC project embodies all the pillars of modernization – from leading-edge methods and sharing and collaboration to statistical capacity building and leadership.

Short-term activities

- Identify and increasingly gain access to administrative and alternative data sources for statistical purposes to produce more timely insights and to fill data gaps.
- Continue to implement, develop, and elaborate the administrative data first agenda and ensure employees have the necessary tools and skills for data discovery and access.
- Create clear, plain language communications around the acquisition, treatment and use of administrative data to ensure transparency, and work toward a more self-serve model for use by all Statistics Canada programs.
- Update the quality guidelines to reflect the increased use of administrative and alternative data in statistical programs.
- Update current policies and directives to respond to the administrative data first agenda.
- Create new policies and directives to respond to the requirement to bring alternative data sources into the agency, including the creation of a policy instrument and operational procedures for web scraping.
- Update policy instruments regarding the implementation of proportionality and necessity concepts during the data discovery stage.

Medium-term activities

- Establish and maintain ongoing, mutually beneficial relationships with data providers.

- Establish mechanisms to include community engagement in data acquisition and use, including using stories on how Statistics Canada's output leads to programs and policies that affect the lives of Canadians, and engaging in open dialogue on privacy concerns and data treatment at Statistics Canada (de-identification, anonymization, use of synthetic data).
- Collaborate with the Office of the Privacy Commissioner of Canada to finalize the development of the proportionality framework.

Future activities

- To foster interoperability from the local to the national level, collaborate with other government organizations (including the provinces, the territories and local area governments) to enhance the usefulness of administrative data for statistical purposes and to reduce duplication, including ensuring the optimization of the legal framework.
- Establish a culture of data reuse and sharing to ensure efficiency, especially with public sector data assets.
- Ensure Statistics Canada has well-established processes to support the acquisition of data that are shared, accessed or ingested from multiple access points.

Expected outcomes

- Data gaps are filled in order to provide new, relevant information to Canadians and support evidence-informed policies (ensure that funding is directed to where it's needed most).
- Increased transparency of the processes and uses of data to maintain social license and trust of Canadians.

Data digitalization

Data-driven organizations require a digital transformation plan. Under the SCDS, a key requirement of our digital transformation is to align operational decisions to the systematic (and automatic as much as possible) interpretation of data. This is rooted in Statistics Canada's ability to deploy advanced analytics at every point of interaction—human as well as machine—to continuously improve decision-making quality and accuracy. The SCDS also ensures that the agency adopts “business-led/technology-enabled” solutions.

The need for tools to collect, store, analyze, manage, share and visualize data is increasing in all departments. Enabling open standards, open source, interoperability and expertise sharing requires access to a common set of data tools commensurate with data needs. Departments also need a flexible framework to explore new tools and more advanced options that are both interoperable and secure. The Government of Canada's (GC) IT infrastructure must be able to support its data system's ambitious agenda. There is a growing need for higher computing capacity and for the modernization of older data infrastructure.¹

Statistics Canada continues to renew its aging and mission-critical IT infrastructure and systems. This work has been prioritized to enable innovative solutions that support modernization.

Statistics Canada's three-year IT strategy includes moving from a “custom-build” approach to a “borrow and buy” approach—only building when necessary to improve agility and responsiveness, and leveraging relationships and collaborating more closely with government departments, other national statistical agencies, the private sector and academia.

The following strategic actions will support the agency's modernization agenda and the GC's direction:

- implement a modern IT organizational model to better support the agency's strategic direction while ensuring sustained ongoing operations
- report regularly on key areas of IT system health performance to drive continuous improvement and reduce maintenance cost
- further develop IT skill sets and partnerships in the areas of IT security, open source, data science, cloud-related disciplines, agile development, user experience design, and technologies such as artificial intelligence and machine learning, smart machines, analytics, digital workplace platforms, containers, and micro services
- implement bimodal governance to better support innovation and remove unnecessary bureaucracy, while aligning and leveraging GC enterprise governance
- develop a digital strategy that aligns with Statistics Canada's modernization agenda and GC digital policy
- modernize IT operational services to support new technologies and approaches, such as cloud enablement and software-defined infrastructure
- adopt risk-based security approaches to support the cloud-first strategy, data access and a mobile workforce
- create a digital workplace so that all employees can work from anywhere, at any time, using modern secure tools

1. A Data Strategy Roadmap for the Government of Canada, joint venture between the Privy Council Office, the Treasury Board Secretariat and Statistics Canada, September 2018.

- facilitate greater access to Statistics Canada data holdings, including anonymized microdata, by giving researchers, policy makers and other stakeholders convenient virtual access to more data and statistical information that will be enriched by new dissemination tools, such as data visualization dashboards and portals, all while continuing to protect privacy and confidentiality
- offer powerful data analytics services with key components like a data management hub, data ingestion services, and data analysis using artificial intelligence, machine learning techniques and high-performance data processing.²



The need for tools to collect, store, analyze, manage, share and visualize data is increasing in all departments.



Increasing Virtual Access to Data

In partnership with Compute Canada, work is underway to modernize the IT infrastructure in Statistics Canada's research data centres (RDCs) to build on the agency's business and security processes, and to foster greater access to data for academic and policy research. The agency is also piloting virtual infrastructure that provides access to linked administrative and business data for its federal and provincial partners. More than 80 new files have been added to the RDC collection since April 2017.

Data Analytics as a Service (DAaaS)

Statistics Canada is establishing data analytics as a service, which will enable the delivery of business capabilities in a more agile, responsive manner. Key components include a data management hub, data ingestion services, and data analysis tools using artificial intelligence, machine learning techniques and high-performance data processing. It will also enable others to securely use the data and increase the availability of Statistics Canada products across Canada. External partners will be able to collaborate through new leading-edge tools and easy access to more data.

2. Chief Information Officer's Message, Martin St-Yves, Statistics Canada, 2018.

Short-term activities

- Deploy experimental projects to secure cloud in fall 2019.
- Begin Data Analytics as a Service (DAaaS) business requirements gathering.
- Develop business case and requirements for high powered computing (HPC) resources to facilitate scientific research (AI, ML, deep learning).

Medium-term activities

- Implement cloud native storage and processing and role and policy based access control and data visualization.

Future activities

- Implement trusted digital identities and state of the art encryption.
- Implement data analytics as a service and remote data ingestion.
- Implement secure multi-party computing and privacy-preserving record sharing.

Expected outcomes

- Digital projects and initiatives successfully align with the GC digital direction including enterprise-wide IT standards, security, and strategic direction ensuring consistency of approach and efficient and effective deployment.

Data interoperability

Interoperability is the ability to access and process data from multiple sources without losing meaning, and then integrate those data for mapping, visualization, and other forms of representation and analysis. Interoperability enables people to find, explore and understand the structure and content of datasets. In essence, it is the ability to “join up” data from different sources to help create more holistic and contextual information for simpler, and sometimes automated, analysis; better decision making; and accountability purposes.³

Adopting standards and adhering to them fosters interoperability, integration and rapid response. Statistics Canada’s standards ecosystem includes data standards, classifications, foundational models, and vocabularies or ontologies.

Statistics Canada has experience and networks, nationally and internationally, to facilitate the definition of standards. National and international standards development organizations are modernizing methods for governing data. Canada is participating to address this still relatively new challenge and maximize our impact through a collaborative approach.

3. Global Partnership for Sustainable Development Data.

Collaborating on Standards

The Chief Statistician is co-chair of the Canadian Data Governance Standardization Collaborative (DGSC), which is working toward delivering a comprehensive roadmap of standards that will benefit Canadian organizations and citizens.

The objectives of the collaborative are to:

- Identify and scope Canadian priority areas for Data Governance that might benefit from standardization;
- Oversee the delivery of a comprehensive roadmap describing the current and desired Canadian data governance standardization landscape, including recommendations to address gaps and new areas where standards and conformity assessment are needed; and
- Recommend proposals for national and international standardization initiatives, timelines and organizations that can perform the work.

Statistics Canada actively develops and maintains statistical standards, promotes and monitors their implementation, and provides guidance on their interpretation. Statistical standards include populations, statistical units, variables and classifications (based on international standards to ensure interoperability).

Statistics Canada also develops, maintains and disseminates statistical metadata for statistical programs under the terms of the Policy on Informing Users of Data Quality and

Methodology. The metadata include information on the variables, classifications, data sources, methodology, data quality, questionnaires, survey questions and response choices.

Future research will be directed toward the use and adoption of open data standards and information exchange protocols. This work will ensure interoperability across the government and with key stakeholders, including non-governmental organizations, think tanks, academia and private sector organizations.

Common Statistical Data Architecture

Statistics Canada is an active member of the High-Level Group for the Modernization of Official Statistics (HLG-MOS), a group of committed Chief Statisticians who are actively steering the modernization of statistical organisations with a mission to work together to identify trends, threats, and opportunities in modernising statistical organisations. Statistics Canada has led efforts on the creation of a common statistical data architecture (CSDA). The CSDA provides a common architectural model and way forward to support statistical organisations in the design, integration, production and dissemination of official statistics based on both traditional and new types of data sources.

Short-term activities

- Research and select appropriate open data standards.
- Continue research and collaboration on international statistical standards and the data reference model, including current commitments to HLG-MOS.
- Create vision, concept case and proof of concept for analytics data pipeline using common, industry-standard open data format.
- Continue participation in the Canadian Data Governance Standardization Collaborative.

Medium-term activities

- Continue to work on the interoperability framework: ontologies, taxonomies, vocabularies and data virtualization.
- Contribute to Pan-Canadian Real-world Health Data Network, metadata standardization.

Future activities

- Conduct continuous research and improvement toward full interoperability.


- Move Statistics Canada toward a standards accreditation body to create national standards.
- Implement Aria classification management (reference data) which forms the initial stages of a whole-of-government approach to classification management.

Expected outcomes

- Adherence to standards will optimize use of data and facilitate sharing and collaboration to ensure whole of government approach and ensure greater public value from data and greater usability and reusability of valuable data assets.

Data management

Data management is the practice of organizing and maintaining data processes to meet ongoing information lifecycle needs. Key components of data lifecycle management include a searchable data inventory, reference and master data management, and a quality assessment framework.



Statistics Canada has experience and networks, nationally and internationally, to facilitate the definition of standards.



As a knowledge-based agency and a highly regarded National Statistical Office (NSO), Statistics Canada takes pride in the information it produces. Effective and efficient management of the data and information collected, compiled, analyzed and published is integral to meeting Statistics Canada's mandate. However, changes in technology have introduced new challenges in data and information management worldwide. Information is being produced at an ever-increasing rate because of the ease with which it can be created, transmitted and duplicated. New electronic formats continue to emerge, while others become obsolete. Organizations are finding themselves burdened with large amounts of unorganized legacy information to sort through while new information is being created at an unprecedented rate.

Increasing demands for flexibility in the work environment, the need to be agile when responding to evolving client and employee needs, and the radical technological shift to cloud are changing the information management landscape. There has never been a stronger need for an integrated, user-based approach—focusing on what information users need and in what form they need it—coupled with the provision of a trusted and authoritative data source. Statistics Canada must fully integrate information management into business processes and IT solution development to excel in and fulfill its mandate to provide insights to Canadians while meeting privacy preservation, confidentiality and security requirements.

Statistics Canada is developing a renewed, lasting and comprehensive enterprise-wide information management vision. This is a critical first step for Statistics Canada to respond to these new information challenges and to ensure the continued delivery of its products and services in an efficient and effective manner.

When fully deployed, the Statistics Canada Picasso platform will give all employees the ability to search and discover data assets and statistical metadata. Data assets include data from all sources, including surveys, administrative data, record linkage projects, big data and web scraping. The Picasso platform will be a key enabler of data stewardship of key strategic assets, as it delivers machine-readable metadata to drive processes, interpretability, coherence, confidentiality, replicability and reversibility. It will be a single toolkit for managing data and statistical metadata, and will lead to minimum storage of archived files. Picasso will replace several legacy systems and ensure a holistic approach to metadata standardization, access and use.

Sharing Expertise

Statistics Canada will release a proof of concept application programming interface (API) that will make available a selection of data holdings and related statistical metadata from the 2019 Picasso database to all Government of Canada (GC) departments. An inventory of administrative data providers from the public sector will be made available in machine-ingestible format. Future work will include developing the capability to ingest metadata stores from other GC organizations and an external user interface to view information from Picasso.

Statistics Canada is currently working with other GC organizations to share lessons learned from the development and deployment of Picasso. Statistics Canada also co-chairs the Data Catalogue Working Group under the Enterprise Data Community of Practice, and the goal of the working group is to develop business requirements for a GC data catalogue.

Reference and master data management are key components of enterprise data management. Statistics Canada has reviewed Scandinavian models for modernizing and creating statistical registers and has launched projects to research, develop, initialize, maintain, update and integrate an interoperable and flexible statistical register infrastructure that will serve as the foundation of statistical activities at Statistics Canada. This includes statistical registers or databases on:

- Buildings and building units
- Geospatial information
- Businesses
- Population

Data quality management and quality control are core business activities at Statistics Canada. A key commitment of the Data Strategy for the Federal Public Service is creating a comprehensive GC data quality framework. Statistics Canada and the Treasury Board Secretariat (TBS), under policy direction and with input from other selected organizations, will develop, implement and support data quality management strategies, policies and practices to support the framework. The proposed framework will establish common enterprise-wide standards to ensure interoperability and will be adaptable to the various realities and data ecosystems of GC organizations.

Statistics Canada currently has several strategies and tools in place to facilitate and ensure effective quality management in all its statistical programs and initiatives, including the Quality Secretariat, the Quality Assurance Framework (QAF) and Quality Guidelines. These tools can be adapted for an enterprise-wide approach to the quality and maintenance of GC data assets.

Leading on Reference and Master Data Management and Sharing

Government of Canada organizations must develop sharing standards to facilitate information exchange toward interoperability. Statistics Canada is in a position to provide GC organizations access to standardized reference and master data which will facilitate data sharing and enable interoperability. Statistics Canada is currently working with Employment and Social Development Canada (ESDC) on a pilot project that will demonstrate how standardized reference data (in the form of addresses and address variants) can facilitate interoperability and the use of data sharing platforms. This initiative would also be a first step toward creating an accurate, standardized national address register. This information would be available to GC organizations via a service on the Canadian Digital Exchange as part of the “tell us once” initiative, and would be released as “open data” in response to Canada’s National Action Plan on Open Government. This would be a proof of concept prototype whereby reference/master data stewarded by Statistics Canada would be accessed by other GC organizations and potentially other levels of government.

Short-term activities

- Support the administrative-data-first approach by identifying and developing processes and tools to improve user-centric services by establishing a strengthened self-serve model (Data Governance and Stewardship Support Services).
- Create clear and plain language communications about the use of the self-serve model (Data Governance and Stewardship Support Services).
- Perform Picasso enhancements that respond to needs of Data Stewardship, Data Analytics as a Service, and reporting requirements of approved specific performance measures.
- Design and perform initial seeding of Statistical Registers, and present concept case for reference data as a service (RDaaS) to the Government of Canada Enterprise Architecture Review Board (GC EARB).
- Work with TBS and other key business owners to establish government-wide master data management program.
- Conduct a quality assurance framework review related to administrative data and non-statistical uses of data and the creation of interdepartmental working group.
- Create improved data stewardship toolkit (training, documented processes and procedures, policy instruments, performance measures, etc.).
- Update the quality guidelines to document the proportionality and necessity concepts for data lifecycle management.
- Update policy instruments regarding the implementation of proportionality and necessity concepts for data lifecycle management.
- Co-chair the Data Quality Working Group under the Enterprise Data Community of Practice.

Medium-term activities

- Develop a fully realized corporate data inventory (Picasso).
- Further develop statistical registers and decommission other registers and frames.
- Research enterprise QAF, which includes assessing the applicability of Statistics Canada's QAF and Quality Guidelines for broader use, including non-statistical data uses; begin developing quality-related training strategies for the GC.

Future activities

- Ensure the enterprise GC data inventory pulls directly from Statistics Canada's meta-store (Picasso platform).
- Fully develop integrated statistical registers (data flow through registers for harvesting and de-identification).
- Develop enterprise QAF (whole-of-government approach).

Expected outcomes

- Data is used more efficiently and effectively throughout the enterprise to ensure everyone views and analyses the same, most recent information to ensure greater usability and public value from data.

Data resources

Statistics Canada currently has a robust recruitment program in place for analysts, IT professionals and methodologists. Recent recruitment campaigns have targeted data scientists, data engineers, business-intelligence experts and cyber-security professionals. Statistics Canada is also continuing to create strong development programs for all new recruits and for current employees seeking to update their skills or learn new ones. Statistics Canada strives to be a “learning organization” and is constantly building statistical capacity and increasing data literacy.

In a time of rapid change and increasing competition for talent, collaboration with partners outside Statistics Canada is essential in progressing the agency’s modernization agenda and its ability to remain responsive to the needs of Canadians and decision makers. Partnerships with postsecondary institutions provide mutually beneficial opportunities with positive short-term and long-term outcomes, including:

- creating mutually beneficial learning opportunities
- creating practical student work experiences for the future workforce, and gaining access to new and developing talent
- establishing career opportunities for highly qualified, experienced graduates who are aware of and interested in the agency’s work (this could be at several levels, such as undergraduate [recruit level] and post-doctoral [mid-level])

The Statistics Canada postsecondary institution partnership approach outlines a framework and assigns roles and responsibilities to the Strategic Management Committee, Modernization Management Committee, Talent Acquisition Committee, assistant chief statistician-level champions, director and assistant director partnership project leads, partnership project teams, and the Human Resources Branch.

Currently, the agency is actively recruiting individuals from the data science community, given the growing requirement for these types of skills within the agency and across all industries. Statistics Canada has developed a data scientist development strategy and partnership framework that outlines key success factors and expected outcomes.

In light of Statistics Canada’s growing need for data scientists, an inter-field working group at the senior management level has been created to establish a corporate recruitment strategy for data scientists. To ensure the right talent and capacity are in place now and for the future, the working group will address human resources practices, including traditional and innovative hiring.

The agency recently created the Data Science Division, which will promote a hub and spoke model to increase awareness, provide expert advice to further data science projects, and expand the use of data science tools and techniques across the agency. Statistics Canada also recently launched a data science fellowship program. Data science fellows will be employed by Statistics Canada and will work within GC departments to leverage its wealth of data for insight and decision making.

Support to the Digital Academy

The Data Strategy Roadmap for the Federal Public Service recognized the need to improve data literacy and digital literacy of public servants to fully leverage the value of data and to improve services and programs for Canadians. The Canada School of Public Service (CSPS) created the Digital Academy in response to this requirement.

Statistics Canada is playing a key role in mapping the future direction of data literacy within the federal public service and has provided significant support to the CSPS on the Digital Academy. This support has included course auditing and feedback, training in data analytics and digital (including artificial intelligence and machine learning), and tutoring and course creation. Statistics Canada has also presented workshops on digital and data innovation, and created synthetic data and a data linkage environment for use by Digital Academy attendees.

Statistics Canada will remain a key partner with CSPS in developing course materials and curriculum for future iterations of the Digital Academy to ensure that learners emerge with a sound foundation of both digital and data literacy. Future direction will also include creating course materials and training on data governance and data stewardship.

Statistics Canada also has a growing number of grassroots communities of practice (CoPs), which self-manage and share a wealth of information and learning resources for data science and general data literacy skills. Current CoPs include the machine learning CoP, the data analytics CoP, and the geomatics CoP, as well as the R/Python Users Group, the Power BI Users Group and the Machine Learning Club.

The agency has also organized several innovation hackathon events, which are collaborative problem-solving events that bring together multidisciplinary teams (GC and academics) to build capacity to mobilize data; increase data literacy; and socialize leading-edge methods and tools, data stewardship best practices and user-centric approaches. These hackathons also provide an opportunity for the agency to attract new talent and encourage more collaborations.

Statistics Canada is also ensuring that, as resource requirements change, the agency provides employees with opportunities to grow and to learn new skills and capabilities to meet these changing requirements. As the agency moves toward more partnerships, more data sharing, and more ingestion of data assets from external sources, the requirements will grow for employees with partnering, negotiation, and engagement skills, and for technical writers, strategists and storytellers.

New Skills Development

Statistics Canada is making significant headway on modernization in the context of a global data revolution. As part of this, the agency is focused on building and nurturing partnerships with clients, businesses and government. The agency recently rolled out a two-day workshop to help employees learn the process, strategies and techniques for successful negotiation. The workshop will ensure employees understand the negotiation process and the agency commitment to mutually beneficial agreements, and how to develop plans, strategies and tactics for effective negotiations.

Short-term activities

- Understand desired competencies and skills for data literacy and data science, including artificial intelligence (AI) and machine learning.
- Establish science-based CoPs and working groups with access to appropriate tools; expand recruitment programs to attract and retain data scientists and data engineers.
- Work directly with the Canada School of Public Service (CSPS) on the Digital Academy roll-out and skill requirements.
- Launch the Data Science Fellowship.
- Establish a Data Science Division.
- Establish an Innovation Secretariat.

- Conduct continuous recruitment campaigns directed toward the right skills required for current priorities.
- Launch a results-driven research and development (R&D) board.
- Work directly with partners across the federal government to establish data literacy competencies for public servants, measure literacy and build training programs.

Medium-term activities

- Collaborate with the CSPS to refresh the suite of training offered to develop and maintain required competencies and skills.
- Increase targeted hiring (science-related skills), AI, machine learning, and the ethical use of automation and AI and other skills as required.
- Improve flexibility to access software and tools across the agency.
- Increase sharing and collaboration within and outside the GC, including access to and use of GitHub, GitLab, Trello and Slack, as well as GCconnex and GCcollab.
- Become the test bed for data science acceleration in the federal government; have GC data scientists work on Statistics Canada premises (with access to data, registers, quality assessment framework (QAF), analytical resources) to create analytical code and processes.

Future activities

- Encourage and support a culture of continuous learning to maintain relevant competencies and skills (Statistics Canada as a “learning organization”).
- Run continuous campaigns to recruit and retain appropriate staff (flexi-CAD, free agent program, academic exchange).
- Establish an evolutionary toolbox for research and methods (ensure scientists have access to the right tools and resources to effectively and efficiently perform their work).
- Become a world leader in data science.

Expected outcomes

- The skills and competencies required to ensure data is used as a strategic asset, including data science, data analysis, communications, engagement and strategy are addressed and responded to ensure increased evidence-informed decision-making.



Data

trust framework

The SCDS mission statement is “delivering insight through data for a better Canada.” This is expressed in Statistics Canada’s core values, which are to be trustworthy, purposeful, caring and inclusive, and curious and always learning.

Statistics Canada has spent more than a century collecting data for statistical purposes and is evolving as information needs grow and new data sources offer new possibilities for information. Currently, the agency is working with experts from businesses and academia from around the world, as well as with the Office of the Privacy Commissioner, to develop new statistical methods based on necessity and proportionality. Necessity determines what data Statistics Canada is mandated to produce to ensure society, the economy and the environment are measured. Proportionality ensures that the volume of data and data sources required by program areas is balanced with response burden, while maintaining protection of privacy. This work complements the work of the agency to ensure social acceptance by maintaining social licence, which is a key driver of the data trust framework.

Statistics Canada currently has, in addition to robust physical and IT security measures, a strong confidentiality awareness program and corporate tools for data access control and confidentiality classification; the application of the new proportionality framework further enhances the privacy preserving principles of the agency.

Future direction is aimed at increased communication and transparency of current practices, and research on new and emerging methods for rules and policy based data access control, automated active auditing, and the development of protocols on appropriate use of synthetic, de-identified and anonymized datasets for training, testing and research as well as the development of improved privacy and confidentiality preserving methods.



A century of
trust • safety • facts

Statistics Canada’s Trust Centre, which launched on the agency’s website in spring 2019, includes features and information on why collected data and information are required and how they are kept safe and private, details on Canadian privacy laws, and information on the agency’s commitment to transparency and accountability.

Short-term activities

- Increase communication transparency of existing privacy and confidentiality practices.
- Work collaboratively with other National Statistical Offices, businesses, academia and the Office of the Privacy Commissioner to develop new statistical methods based on necessity and proportionality.

Medium-term activities

- Research new and emerging methods for privacy and confidentiality protection.
- Implement role and policy based access control and automated active auditing.

Future activities

- Fully automate data access control and audits.
- Implement appropriate levels of privacy control.
- Publish code and methods on the Open Data Portal for transparency.

Expected outcomes

- Protection of individuals' information and privacy ensure that Canadians remain confident of the work of Statistics Canada and the agency remains a trusted source of data and insights.



Data leadership

As a result of the strategic data capabilities outlined throughout this document, Statistics Canada is well positioned to take a leadership role in ensuring the strategic use of data across the federal government. Through partnerships and collaboration with all levels of government, the agency is working to optimize data access and use, provide guidance on data management, and support data-driven innovation in order to bring value to Canadians. The agency is in a position to inform on standards to ensure consistency across the federal government and to lead in areas such as the ethical and secure use of data, data quality, data catalogues and inventories, data integration, capacity building, and information generation through statistical science. Statistics Canada is also providing guidance and support to other departments on the development and operationalization of their departmental data strategies.

Statistics Canada co-led, in partnership with the Treasury Board Secretariat (TBS) and the Privy Council Office (PCO), the drafting of the Data Strategy Roadmap for the Federal Public Service (DSFPS). Statistics Canada is currently chairing or co-chairing several federal government working groups under the Enterprise Data Community of Practice, including the Data Governance Working Group, the Data Catalogue Working Group, the Data Reference Working Group and the Data Quality Working Group. The goal of the working groups is to build capacity throughout departments by sharing expertise and best practices. Statistics Canada's role is to share the agency's unique expertise in making relevant and high-quality data accessible to users while minimizing the risk of disclosing information on a specific individual, business or institution.

While Statistics Canada is leading, co-leading and supporting on a number of initiatives from the DSFPS, the agency is currently developing implementation plans for three key initiatives

which have been identified as a priority for the agency: data literacy and training, data stewardship engagement strategy, and a data science community of practice.

The data literacy initiative is being launched in response to the need, as outlined in the DSFPS, for data literacy training to increase competency and skills among public servants. This need has also been identified by Statistics Canada's data users and stakeholders. The goal of the initiative is to provide user-centric training that targets a range of skill levels such that learners will have the necessary skills to use and understand Statistics Canada data to make evidence-based decisions.

The data stewardship engagement initiative will begin by focusing on the sharing of reference and master data. A pilot project, in collaboration with Employment and Social Development Canada (ESDC), will demonstrate how standardized reference data can facilitate interoperability and the use of data sharing platforms. The outcome of the pilot is the creation of a proof of concept prototype whereby reference data stewarded by Statistics Canada is accessed by other GC organizations thus releasing them from the burden of creating and stewarding the data themselves. The longer-term objectives of the data stewardship engagement strategy are to leverage partnerships and key governance tables to optimize the use of data as a strategic asset across the federal government by making high-quality data discoverable and accessible in a consistent manner, leveraging expertise across the enterprise, facilitating data sharing and integration, reducing duplication, increasing transparency, and ensuring that Canadians have greater trust in the quality, confidentiality, and value of public sector data and information.

The goal of the data science community of practice (CoP) initiative is to create an inter-governmental CoP for data science specialists. This CoP will establish the foundations of a

government-wide data science ecosystem which will allow expertise to be shared across the government for establishment of best practices. The outcome of the CoP will be the creation of a forum for knowledge sharing and collaboration, GC capacity building in data science, and the creation of collaborative networks with academics and industry to further drive government outputs.

As a world-class National Statistical Office, Statistics Canada also occupies a leadership role on the international stage including within UNESCO (the United Nations Educational, Scientific and Cultural Organization), OECD (Organization for Economic Co-operation and Development), UNECE (United Nations Economic Commission for Europe), UNSD (United Nations Statistics Division) and the HLG-MOS (High-Level Group for the Modernization of Official Statistics), to name a few. National Statistical Offices around the world are showing leadership in governance, ethics, privacy protection, quality, data sharing, data interoperability, analytics, data stewardship, data literacy, and more. Statistics Canada represents the nation on international committees, associations and working groups on subjects such as data architecture, international standards and standards boards, data sharing and strategic partnership frameworks, data interoperability, and statistical methods and research. The agency achieved this by fostering collaboration through international partnerships. While Statistics Canada shares expertise in many of these forums, the agency also gains insight and information that is beneficial to the agency and National Statistical System. This is information that can be shared across the GC to further drive enterprise data management and stewardship.

Short-term activities

- With the Privy Council Office and TBS, clarify the potential role of Chief Data Steward for the Government of Canada.
- Develop work plans and implement on three key initiatives: data literacy training, data stewardship engagement strategy, and data science community of practice.
- Continue leading and expanding on innovative partnerships and experimentation (for example through hackathons and horizontal reviews).

Medium-term activities

- In partnership with TBS, co-lead work on the development of frameworks, principles, protocols and guidance for ethical and secure data use.

Future activities

- Develop modern and non-invasive stewardship rules, guidelines and principles that involve the changing data ecosystem through continuous learning and GC and international information and best practices exchange with other public and private sector organizations and academia.

Expected outcomes

- Optimized use of data across the federal government resulting in increased public good; increased public trust and confidence in the value of public sector data and information.

Leading on development of measurement frameworks

In a fast-moving Federal Public Service, organizations are looking at data to inform how to internally invest resources effectively and efficiently and to better understand the impact these investments have on employees. Statistics Canada is leading work with interdepartmental partners to develop high-quality strategies that measure key priorities of the Government of Canada and directly affect the daily lives of Federal Public Servants. Through the development of measurement frameworks for Beyond 2020: Public Service Renewal, the Federal Workplace Mental Health Strategy, and the Accessibility Strategy for the Federal Public Service, Statistics Canada is bringing direction and clarity to complex issues in support of a modern and data-driven Federal Public Service.

Next steps

Shortly after submission of the SCDS on September 30, 2019, a governance committee (new or existing) will be assigned responsibility for creation of an implementation plan for the SCDS. The governance committee will ensure that accountabilities for the SCDS, in the form of performance measures, are assigned to program areas. These program areas will work with the Strategic Data Management Branch and the Corporate Strategy and Management Field to ensure alignment to modernization and to the requirements of the 2019 Management Accountability Framework.

Statistics Canada is committed to sharing best practices, building capacity, collaborating with our partners, and meeting our users' needs as the data landscape evolves. The SCDS is a living, evergreen document that will be updated as required in response to this evolution.

Glossary of terms

Data ecosystem

A data ecosystem is defined as the collection of stakeholders, capacities, processes, policies and infrastructure used to capture and analyze data.

National statistical system

The national statistical system (NSS) is the ensemble of statistical organizations and units within a country that jointly collect, process and disseminate official statistics on behalf of national government. OECD Glossary of Statistical Terms, February 4, 2004. (<https://stats.oecd.org/glossary/detail.asp?ID=1726>)

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