

# Modernizing the National Statistical System



100

STATISTICS  
CANADA

ONE HUNDRED YEARS  
AND COUNTING

## Stakeholder Consultations

**Anil Arora**  
Chief Statistician of Canada



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## Note of appreciation

Canada owes the success of its statistical system to a long-standing partnership between Statistics Canada, the citizens of Canada, its businesses, governments and other institutions. Accurate and timely statistical information could not be produced without their continued co-operation and goodwill.

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## Why we're here

Data and the digital economy are rapidly driving innovation and creating economic and social benefits across Canada and around the world. Businesses, governments and citizens alike are subject to an explosion in big data and rapid advances in data analysis tools and technologies, leading to opportunities across the economy and society. Data provide insights for all governments and help design programs that benefit citizens, give better access to services, increased transparency and greater efficiencies. These can, in turn, lead to increased standards of living and social inclusivity, ultimately helping people live more productive and healthier lives.

The Government of Canada has launched a national consultation on digital and data transformation in order to better understand how Canada can drive innovation, prepare Canadians for the future of work, and ensure they have trust and confidence in how their data is used. As part of this national consultation, Statistics Canada is consulting on its modernization strategy to meet the data and statistical needs of a data-driven society and economy.

Over the past year, the Chief Statistician of Canada has undertaken consultation roundtables on modernization. This summer, and over the coming months, Statistics Canada will host roundtables in cities across Canada with business, academia, civil society and others on the vision for a modernized national statistical system. Because there is strength in diversity, the roundtables will include women, Indigenous peoples and other under-represented groups. All Canadians are invited to have their say in the modernization roundtables on how to advance Canada's competitiveness through the digital economy.

### Background and International Context

Globally, other countries have begun to seize opportunities that enable their societies to leverage the power of big data and the new data economy. In May 2016, the United States published the *Federal Big Data Research and Development Strategic Plan*, with investments of hundreds of millions of dollars attached. In March 2017, the United Kingdom published the comprehensive *UK Digital Strategy*

policy paper, setting out the plans for the development of a “world-leading digital economy that works for everyone.” The U.K. also passed the *Digital Economy Act 2017* to modernize its legal framework and ensure that governments, industry and citizens can take advantage of the new opportunities. Canada needs to grasp these same opportunities. Canadian businesses have to adopt new technologies, however, many remain uncertain about how to use data to benefit their customers as well as themselves.

Government departments and agencies generate and use vast amounts of data, including tax returns; social program data; regulatory submissions; fuel consumption statistics; immigration flows; weather information; geospatial data on lands, buildings and physical features; crop inventories; and business activities. Yet data are not consistently managed as a strategic asset. Individual departments have often attempted to improve their capacity to manage and use data, but have been frustrated by the costs of data acquisition, legal impediments to accessing data and IT challenges. Data assets become stranded across departments and cannot be integrated to respond to complex policy questions such as the opioid crisis and Indigenous social welfare.

The explosion of data also brings with it more variation in quality. The supply of good data cannot meet the demand, sometimes leading businesses, governments and citizens to make critical decisions based on low-quality data. And with an increased use of data, statistical literacy becomes even more crucial to the effective use of data to drive innovation.

The Government of Canada's commitment to open government is founded on the strong history of transparency and accountability first established with the enactment of the *Access to Information Act* in 1983. In 2012, the Government joined the Open Government Partnership and, in June 2013, the Government endorsed the G8 *Charter on Open Data*. The Government of Canada has taken significant steps to ensure more open data and open information inventories. Statistics Canada is one of the largest contributors of data files to the Open Government portal today, providing Canadians with high-quality data for decision making.



While supporting greater openness of information, the Government of Canada must move to make full use of its data assets while ensuring privacy. The Government of Canada has legislation in place that protects the privacy rights of Canadians (the *Privacy Act* and the *Personal Information Protection and Electronic Documents Act*). Statistics Canada will continue to use its unique expertise and proven statistical methods, protocols and systems to maximize the quantity and quality of data made accessible to users while minimizing any risk of disclosure.

In order to ensure that Canada does not risk becoming data rich and concurrently information poor, the Clerk of the Privy Council has initiated a whole-of-government approach for a policy framework and plan to improve how we generate, use, share and disseminate data, capitalizing on the expertise of a renewed and modernized Statistics Canada.

## 1.0 What is modernization of Statistics Canada?

A modernized Statistics Canada, working in partnership with stakeholders, firmly positions data at the core of innovation, while ensuring that privacy and equality of opportunity remain paramount. This approach is embraced by businesses, governments, academia and citizens alike. Through a modernized Statistics Canada, high-quality data are available in usable and understandable formats. These data break down information gaps, enabling the sharing of ideas that raise productivity, increase standards of living and foster social inclusion. Businesses are fully enabled to capitalize on the value of data-driven innovation, allowing them to create meaningful employment and wealth by using market information to develop new products and services that meet the demands of their customers. Robust access to data by the academic sector spurs research and attracts international talent, leading to new discoveries and getting innovations to market. Citizens also use data to make everyday decisions such as where to live, what kind of education or job to pursue, and how to spend their leisure time.

Other countries have begun to modernize their data collection systems, recognizing the key role their statistical agencies should play in driving data innovation. For example, Australia is investing significantly to modernize the Australian Bureau of

Statistics infrastructure and increase its reliance on administrative and transactional data. Meanwhile, New Zealand recently announced it intends to increase the production and provision of data two-fold and the value of data ten-fold by 2030, and has designated a Chief Data Steward, with a broad mandate to help government use data more effectively.

Since taking office in November 2015, the federal government has taken significant steps to strengthen and modernize Statistics Canada and the national statistical system (NSS), starting with the reinstatement of the 2016 long-form census. Bill C-36, enacted in December 2017, enhanced Statistics Canada's independence and initiated the creation of the new Canadian Statistics Advisory Council, whose mandate is to assess and report annually on the health of the NSS. Implementation of the C-36 amendments is progressing; under the new provisions of the Statistics Act, the Chief Statistician has been appointed to a five-year renewable term for the first time, and board positions on the Canadian Statistics Advisory Council will be advertised for applicants in 2018.

Budget 2018 also included new funding to support Statistics Canada's modernization plans. It announced funding of \$51.3M to provide new resources that improve Statistics Canada's technological statistical infrastructure through the development of a "Data Analytics as a Service" platform, policy capacity for Gender Based Analysis Plus (GBA+), and an Indigenous capacity building program that provides Indigenous peoples with the skills and tools necessary for data independence.

The agency has developed the following five modernization pillars, based on its traditional values that will form the foundation for a future national statistical system:

- 1. User-centric service delivery:** Users have the statistical information they need, when they need it, and in the way they want to access it, along with the tools and knowledge required to make full use of the data.

2. **Sharing and collaboration:** Programs and services are delivered using a collaborative approach with partners and stakeholders that allows for the open sharing of data, expertise and best practices, while removing barriers to accessing data. The amount of suppression in data products is reduced, yet confidentiality and privacy remain protected.
3. **Leading-edge methods and data integration:** Statistics Canada has access to new and previously untapped sources of data, the role of surveys is reduced, and the response burden on Canadians is lowered. Greater reliance is placed on data integration and modelling through a greater capacity for research and development.
4. **Statistical leadership and capacity building:** Statistics Canada's expertise as a data steward is leveraged to support an integrated, whole-of-government approach to the collection, sharing, analysis and use of data. Statistics Canada helps foster the critical analysis skills needed to use data effectively, and plays a leading role in building the statistical literacy of Canadians and promoting the effective use of data in decision making.
5. **A modern workforce and a flexible workplace:** As an organization, Statistics Canada develops the talent and environment needed to fulfill its current and future needs, and continues to position itself for the future.

To test these pillars before putting them into practice, Statistics Canada undertook four pathfinder projects that used innovative approaches and modernized every step of the data production and dissemination process. These projects focus on key policy areas for Canadians (tourism, housing, cannabis and the low-carbon economy) and have already demonstrated strong results.

In the case of cannabis, for example, Statistics Canada established the [Cannabis Stats](#) Hub, which provides comprehensive data on the health, justice,

economic and social dimensions of cannabis use. Such data are essential for understanding the economic and social impacts of the legalization and regulation of non-medical cannabis. Data located on the hub are generated by using not only traditional sources like existing surveys and administrative records, but also by using innovative new sources such as web scraping and crowdsourcing. Statistics Canada is even experimenting with testing for residual chemicals in waste water to estimate the prevalence of cannabis and opioid consumption. This has resulted in new methods being developed and new sources of data being collected to further our understanding of social and economic factors being impacted by cannabis use.

## 2.0 The modernization strategy

The strategy for modernizing Statistics Canada is based on five pillars; it has been influenced by stakeholder consultations and the lessons learned over the course of the four pathfinder projects. The strategy is designed to achieve three important outcomes:

- **Increased access to data** and microdata to foster innovation and inclusion.
- The mobilization of data by **leveraging Statistics Canada's expertise as a world-leading data steward.**
- **Increased data literacy** through the building of statistical capacity.

Key questions for modernization focus on areas where modernization will make the biggest difference to users and clients:

1. What changes are necessary to the current culture, legislation, policy and/or administrative procedures in departments and levels of government to fully benefit from these modernization efforts?
2. What type of structure will drive the full potential of increased data sharing and greater data access across departments and all levels of government?
3. Which key partners and partnerships will increase statistical/data literacy and help build capacity efficiently?

## 2.1 Significantly increased access to data and microdata to drive innovation and inclusion

A key priority for increasing data access is to remove legislative and cultural barriers to enable the responsible sharing of data across all levels of government and the economy. Although significant amounts of administrative, regulatory and other data already exist in domains such as health, justice, gender, Indigenous peoples and the environment, inefficient sharing among jurisdictions can make it difficult to address significant social and health challenges, such as the opioid crisis. From a whole-of-government perspective, these impediments prevent the realization of valuable insights into the performance of existing programs and linkages between programs, and where there may be gaps or opportunities for additional support. Both legislative and administrative changes will be required to remove barriers and increase the amount of data shared for statistical purposes.

Access to microdata for analysis by qualified researchers in government, as well as in the academic sector, is hampered by outdated legislation and institutional barriers. Many countries have explicitly recognized the important role that researchers play in innovation, and have developed modern legal and administrative frameworks for making microdata available to them while continuing to protect confidentiality and privacy. Canada has fallen significantly behind in this area and there is now a pressing need to improve how data are made available to qualified researchers for legitimate purposes.

At the moment, access to existing government data is fragmented across multiple departmental and agency websites. For businesses, governments and citizens to fully harness the innovative potential of data, however, they also need free and easily navigable government data portals that are organized to suit their needs and accessible from a variety of platforms, including desktops, tablets and smartphones. Statistics Canada is working towards publishing data within an integrated and standardized environment where all Canadians can access information on the state of the economy and society. Such thematic web portals would allow free access to aggregate data, in easy-to-understand language and exportable formats that preserve data confidentiality.

## 2.2. Mobilization of data using Statistics Canada's expertise as a world-leading data steward

The second outcome involves leveraging Statistics Canada's long-standing expertise as a data steward<sup>1</sup> by having it support efforts in the areas of big data and data integration.<sup>2</sup>

First, Statistics Canada would play a leading role in identifying and facilitating the sharing and integration of data. This might involve creating and maintaining an inventory of key data files of value, and, in certain cases, where the statistical use of data would clearly be in the public interest and public funding is involved, access to data for statistical use should be a pre-condition.

Privacy and confidentiality are critical components in the collection and use of data. As such, Statistics Canada will play a leading role, in partnership with the Privacy Commissioner and central agencies, in developing standards and guidelines to ensure the confidentiality and privacy requirements for data holdings are met. Fostering a culture of confidentiality and privacy protection within all organizations producing or using official statistics is critical.

The explosion of big data and administrative data calls for the development of new, leading-edge approaches and tools for collecting, acquiring and integrating these new data into statistical frameworks. Through its data expertise, Statistics Canada will leverage such data better via modernized data sharing and consent regimes, resulting in better access to administrative data and big data held by all levels of government and the private sector. The use of web-based data collection, such as web scraping and crowdsourcing, may be explored as part of this effort. Emerging data analysis methodologies, such as artificial intelligence and machine learning, may also be used to extract maximum value from new sources of data in a transparent fashion.

The mobilization of data requires that Statistics Canada and its stakeholders have access to a state-of-the-art IT platform and provide faster and more

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1. A data steward or officer is responsible for using an organization's data governance to ensure both the quality and strategic use of data.  
2. Data integration combines multiple datasets at either the aggregate or the individual record level to generate analysis and insights that cannot be made with the datasets in isolation.



powerful service to all its users. To this end, Budget 2018 provided modest resources to Statistics Canada to work in partnership with Shared Services Canada, the Chief Information Officer Branch of the Treasury Board Secretariat, as well as other stakeholders, to facilitate investments in informatics infrastructure.

### **2.3 Significantly increased data literacy by building statistical capacity**

The third strategic outcome focuses on the individuals using the data, whether it be businesses making investment decisions, governments developing and evaluating policies and programs, researchers providing new insights through sophisticated data analysis techniques, or individual Canadians using data to inform their daily lives and activities. Building data literacy and statistical capacity requires a sustained, long-term effort across a wide range of users, including potential users, and involves many partners and stakeholders. With such a wide variety of existing and potential users, in addition to the numerous uses of statistical data, the plan focuses on building capacity in areas with the greatest need and of the highest priority. It also includes initiatives to develop and sustain data science as a discipline within governments to ensure that statistical literacy and capacity remain current.

First of all, since statistical capacity means that users can find the information they want without having to be familiar with how governments and data are organized internally, Statistics Canada should examine how it can be more user-centric. To accomplish this, the agency should realign its regional offices into a network of public-facing data service centres, where the information needs of data users can be serviced in person by professional statistical staff.

Statistics Canada has a large repository of sex-disaggregated data. However, the lack of an integrated hub that brings together all the information holdings relevant for GBA+, diversity and inclusion hinders federal departments' capacity to conduct GBA+ analysis efficiently. In response to this need, Budget 2018 provided funding to Statistics Canada for the Centre for Gender and Diversity Statistics, which will provide a focal point

for information holdings supporting GBA+, diversity and inclusion, where departments can access detailed data in support of the budget, Memoranda to Cabinet (MCs), and Treasury Board (TB) submission processes.

The Government of Canada is committed to a renewed relationship with Indigenous peoples, based on the recognition of rights, respect and partnerships. Currently, the government's data and statistical resources on Indigenous issues are fragmented in multiple departments with little strategic outreach to Indigenous groups about their data needs. To tackle this challenge, Budget 2018 provided Statistics Canada with funding to lead the Indigenous Statistical Capacity Development Initiative aimed at providing expanded services and building statistical capacity, grounded in the needs of First Nations, Métis and Inuit peoples. The Initiative will offer statistical training, engagement and outreach, enabling Indigenous organizations to develop and sustain statistical capacity.

Finally, statistical and data literacy are critical aspects in the development of an informed workforce and society. But Canada does not have a common curriculum for data literacy. A modernized Statistics Canada will work collaboratively with provincial and territorial partners to determine appropriate outreach programs for academic institutions.

### **2.4 Businesses**

Many information-savvy businesses already use data as a driver of business intelligence. They are likely to see increased access to more data as a positive aspect of modernization, but to make this happen the sector will also be called on to make more of its own data available to the NSS. Many private organizations already provide data at little or no cost, but there can be situations where private organizations see Statistics Canada as being in competition with their own business model. It will be important to work closely with private organizations to unlock the benefits of data held by the sector while not hindering their legitimate commercial interests. In short, how can we collaborate in a more modern, balanced and effective manner?

## Key questions:

1. Where does Statistics Canada most need to improve its support for businesses accessing and using its data? What are the priority gaps in terms of data needs for the private sector?
  - o Thematic web portals?
  - o Data Service Centres?
  - o Support for fundamental research?
  - o Reducing the cost to access data?
  - o Timeliness of data?
  - o Data on topics not currently well covered?
  - o Others?
2. What are the challenges with providing Statistics Canada with access to private sector data for statistical purposes?
  - o Costs to businesses of providing access?
  - o Competition with their business model or intellectual property issues?
  - o Client confidentiality or privacy concerns?
3. How can Statistics Canada partner with the private sector to increase data literacy and build statistical capacity in the private sector, as both producers and consumers of data?
4. What is the appropriate mix of public/private partnerships for developing IT platforms that will be needed? What could be the technical options for such a platform?
5. What are the lessons learned from the private sector about data and analytics?

## 2.5 Non-profit sector

The issues for organizations within the non-profit sector are likely to be similar to those for the private sector. Organizations in this sector are expected to be both providers of raw data and consumers of finished data products. There may be more emphasis on the costs to non-profit organizations, both to

provide data to Statistics Canada and to access data. There is likely to be less concern about competition with Statistics Canada, as these organizations do not generally have a commercial interest in producing data, although they are frequently aware of the value of the data they hold.

## Key questions:

1. Where does Statistics Canada most need to improve its support for non-profits accessing and using its data? What are the priority gaps in terms of data needs for the non-profit sector?
2. What are the challenges with providing Statistics Canada with access to non-profit sector data for statistical purposes?
3. How can Statistics Canada partner with the non-profit sector to increase data literacy and build statistical capacity in the non-profit sector, as both producers and consumers of data?
4. What can we learn about data and analytics from the non-profit sector?

## 2.6 Academic and research sector

Modernization of access to Statistics Canada's microdata holdings for legitimate research purposes has long been advocated by the academic community, and by researchers in federal departments and provincial and territorial governments. The changes to the Statistics Act and the new administrative tools and arrangements will greatly improve this access. It will be important to work closely with this community during the transition to ensure their needs are met while still protecting the confidentiality of the data. Consultations with this community would include both academic institutions and professional societies and associations.

Data quality is also likely to be a particular concern for this sector. Statistics Canada is noted for the high quality of the statistical data it produces and has been a world leader in the development of



frameworks, methods and best practices for assuring and assessing the quality of statistical data. In moving forward with its modernization efforts, Statistics Canada will not weaken its commitment to producing data with the appropriate level of quality. But new methods for collecting, acquiring, integrating and analyzing data will demand the development of new approaches to assessing and assuring the quality of data. Close collaboration with administrative data providers to identify the suitability of their data for statistical purposes will be key, and continuity and coherence between new and old data series will be important considerations.

The educational outreach activities planned will also be of interest to the academic sector.

### Key questions:

1. How can the academic sector partner with Statistics Canada to identify specific areas of need for building statistical literacy and to develop capacity?
2. How can the academic sector contribute more broadly to modernization of the NSS?
3. How can Statistics Canada work with the academic sector to increase access to data?

## 2.7 Individual Canadians

Canadians are likely to welcome the reduced burden they will experience with the reduction in survey-taking. However, the expansion of data sharing and data may give rise to concerns about increased risks to privacy and confidentiality. Some members of the public will likely oppose any sharing of their data for any reason without their knowledge and consent, and some will take the position that the government already has their information and should not ask for it again.

Many other Canadians may agree with the sharing of their data for valid statistical purposes, provided that they trust the institutions sharing the data and that strong measures are taken to protect confidentiality. And public perceptions can also be volatile; a privacy breach by a government department or a private business can significantly change how the public views the security risks of large datasets containing their personal information.

The whole-of-government approach to the collection and use of data for statistical purpose, including the benefits, the risks and the measures being taken to mitigate those risks, will need to be communicated clearly to the public. Statistics Canada proposes to work with the Office of the Privacy Commissioner, other departments and central agencies, other levels of government, academics, the non-profit sector and the private sector to engage in a dialogue with Canadians on this fundamental part of the strategy.

### Key questions:

1. How will modernization benefit Canada, in particular individual Canadians?
2. How can Statistics Canada effectively communicate the benefits of modernization?
3. What do you need from Statistics Canada to make it more relevant to your work?
4. How can Statistics Canada better meet your access and data availability needs?

## 3.0 Giving feedback

Modernization represents a significant change to the way Statistics Canada fulfills its mandate, which the agency is eager to embrace. For modernization to succeed, stakeholders must leverage the opportunities provided and fully engage in the strategy. The support and participation of all stakeholder groups will be important to fully realize expected results.

Statistics Canada plans to consult on its modernization strategy in the following ways:

- Statistics Canada will conduct, as part of its 100th birthday celebration, a series of open public events across Canada in 2018 to raise awareness of its modernization strategy and the expanded potential for government departments, the private sector, academics and the general public to access and use new sources of data that will be made available.

- Statistics Canada will use its social media platforms, in particular Facebook and Twitter, to inform Canadians about the plans for modernization and about progress towards the vision. Canadians will be invited to comment through these platforms.
  - Presentations for important business and academic conferences will be used to generate interest and feedback on the potential and the strategy for modernizing the national statistical system. Participants will have an opportunity to discuss their ideas directly with presenters or send written comments to Statistics Canada after the conference.
  - Presentations at international meetings will take place and consultations with other national statistical offices will be held to share the Canadian experience and learn from the international statistical community.
  - Statistics Canada will continue to consult on modernization through its existing framework of federal-provincial-territorial consultative committees. To the extent possible, consultations with provinces and territories will be broadened to include provincial data providers and potential providers.
  - Bilateral consultations will be held with key government departments that are major users or suppliers of data, and with central agencies that will play a coordination or governance role. Consultations will also take place with other important stakeholders, including the Office of the Privacy Commissioner, the Information Commissioner, the Canada School of Public Service and Indigenous groups.
  - The Canadian Statistics Advisory Council will play a significant role in providing advice and guidance on modernization on an ongoing basis.
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## 4.0 Conclusion

The national statistical system contributes to Canada in an important way, providing the relevant and high-quality data that are key to developing the digital economy and the democratic and inclusive society of the future. The global data revolution is unfolding at an increasingly rapid pace, and Canada cannot afford to be left behind. This document has described Statistics Canada's vision for a modernized national statistical system and its strategy for making it a reality in partnership with its many stakeholders. Canadians are now invited to help shape the strategy and the plans described in this document, and to contribute to building the modern national statistical system of the future.

Anil Arora  
Chief Statistician of Canada  
anil.arora@canada.ca