

## Maintaining Public Trust in Official Statistics

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### Abstract

Ongoing societal transformation is challenging the notion of trust in the realm of official statistics. This paper considers the causes and implications of this dynamic, describing how Statistics Canada has responded to such challenges in the past and how the agency is modernizing as means of maintaining public trust moving forward.

### 1. The Role of Trust in Official Statistics

As provider of an essential public good, the work of a National Statistical Organization (NSO) relies on an indispensable degree of trust. The public must have confidence in every aspect of our work: data must be relevant, of high quality, timely and accessible; and work must be carried out ethically and transparently, with the privacy and confidentiality of respondents protected. Above all, the NSO must be responsive and committed to meeting public information needs.

In the world of official statistics, the importance of public confidence is nothing new. This notion is embedded in the Fundamental Principles of Official Statistics, created toward the end of the 1980s as central European nations began to shift from centrally-planned economies to market-oriented democracies. A set of principles governing official statistics became essential to ensure that the national statistical systems in these countries would be capable of producing data in adherence to certain scientific standards. The United Nations Statistical Commission adopted the Fundamental Principles of Official Statistics in 1994. Twenty years later, these same principles were endorsed by the General Assembly and remain in place today<sup>1</sup>.

In summary, the 10 fundamental principles are: relevance, impartiality and equal access; professional standards and ethics; accountability and transparency; prevention of misuse; sources of official statistics; confidentiality; legislation; national coordination; use of international standards; and international cooperation<sup>2</sup>.

The common thread here is trust, a concept that remains deeply rooted within the statistical community, and has become the subject of increasing focus in recent years. In 2017, the Organization for Economic Co-operation and Development (OECD) published the *OECD Guidelines on Measuring Trust*, recognizing trust as “a key ingredient of

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<sup>1</sup> “Fundamental Principles of National Official Statistics” [online]. Available at <https://unstats.un.org/unsd/dnss/gp/fundprinciples.aspx>

<sup>2</sup> “Fundamental Principles of Official Statistics” [online]. Available at <https://www.unece.org/stats/archive/docs.fp.e.html>

growth, societal well-being and governance”<sup>3</sup>, and highlighting the role of the NSO as critical to enhancing the utility of existing trust measures.

This intensified focus on trust is a product of the times: while the principles of official statistics have not changed, the environment in which we live and work has. As a result, the dynamic of trust between the NSO and the public continues to evolve.

This paper looks at the underlying causes of this changing dynamic, its implications for NSOs more generally and what Statistics Canada is doing to respond.

## 2. The Canadian Context

The notion of trust figures prominently in the Canadian context, where there is a strong appreciation for the principle of open government. As a member of the Open Government Partnership and a signatory to the G8 Charter on Open Data, Canada is deeply committed to meeting public information needs by providing access to data that enables citizens to hold their government accountable.

Statistics Canada plays an essential role in this respect, by supporting informed policy and evidence-based decision-making. Its statistics inform on the state of the economy and society and help determine transfer and equalization payments between different levels of government, as well as the distribution of federal and provincial sales tax revenues. Similarly, its demographic data determine representative seating in Canadian parliament.

In recent years, the Government of Canada has underscored the value of Statistics Canada’s role, by taking significant steps to strengthen both the agency itself and the national statistical system. In December 2017, the *Statistics Act* was amended, formalizing Statistics Canada’s independence and strengthening its credibility. A new Canadian Statistics Advisory Council was also established, to monitor the overall quality of the national system.

Statistics Canada has a longstanding reputation as producer of high-quality data and recently marked a milestone, celebrating 100 years since its founding, as the Dominion Bureau of Statistics. Over the last century, the organization has grown from a small team focused on tracking population size and core industries, to a sophisticated data provider, measuring everything from economic performance, employment and trade, to health, education, immigration and the environment.

Throughout its history, the agency has enjoyed a strong relationship with Canadians, whose cooperation has been integral to the success of its many programs and surveys. In moments where this bond has been tested, Statistics Canada has responded.

Prior to the creation of a national statistical organization, Canada’s primary statistical unit—then part of Agriculture Canada—was challenged about the completeness of the census; there were also issues relating to duplication of effort, with incoherent estimates across government departments. Following a commission in 1917, the Dominion Bureau of Statistics was created with the 1918 *Statistics Act*. The Act provided the Bureau with a

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<sup>3</sup> “OECD Guidelines on Measuring Trust” [online]. Available at [https://www.oecd-ilibrary.org/governance/oecd-guidelines-on-measuring-trust\\_9789264278219-en](https://www.oecd-ilibrary.org/governance/oecd-guidelines-on-measuring-trust_9789264278219-en)

mandate to collect and produce a variety of socio-economic statistics, and set the tone for collaboration with other departments.

From its inception to the end of the Second World War, the Dominion Bureau of Statistics continued to serve as the primary statistical source, but was periodically questioned regarding its interpretation of the macro economy and its coverage of aspects of society. Each time, the Bureau responded with innovative technical developments and pragmatic implementations, showcasing its expertise and commitment to excellence.

In the 1950s, the Bureau was strongly pressured to provide increased and more timely coverage of social statistics—particularly labour-related data—to support the post-war reestablishment of soldiers and economic statistics to understand the rapidly growing Canadian economy. In response, sampling methodology was adopted and regional offices were established to facilitate faster production of estimates, such as with the Labour Force Survey. A research and development unit was also established, leading to the creation of the first modern version of a system of national accounts.

In the early 1960s, a Royal Commission—the Glassco Commission—was appointed to evaluate and "...report upon the organization and methods of operation of the Government of Canada."<sup>4</sup> The Commission once again noted duplication and overlapping services, including statistical activity in the form of multiple departments contacting Canadians and businesses. These findings were compounded by concerns in the late 1960s, that statistical needs were not being adequately met and that there was not enough attention on anticipating future demands.

In response, the *Statistics Act* was amended in 1971, creating Statistics Canada. The amended Act added analysis to the agency's mandate, alongside a new focus on promoting the avoidance of duplication. With the addition of Federal-Provincial-Territorial consultations, the agency was better equipped to answer demands.

In the 1970s, during the era of stagflation, the accuracy of key statistics was called into question. In the following decade, the agency worked to forge strong relationships with other government departments and enhance consultative arrangements through a network of external advisory committees. Its partnership with the media was also strengthened, to better serve the public.

Trust in Statistics Canada was again challenged in 2011, when the government at the time made the decision to replace the mandatory long-form census questionnaire with a voluntary survey. This decision generated serious doubts about the continuity and quality of census data, and posed a significant risk to the agency's reputation. The mandatory long-form questionnaire was restored for the 2016 Census, and Canadians demonstrated their renewed confidence in the agency by participating at a record-breaking rate of 98.4%.

The unparalleled success of the 2016 Census and the wealth of statistical output that followed illustrates the inherent interdependency between an NSO and its population:

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<sup>4</sup> Worton, D.A. (1998). *The Dominion Bureau of Statistics: A History of Canada's Central Statistical Office and Its Antecedents, 1841-1972*. Montreal, QC: McGill-Queen's University Press, 267.

Statistics Canada relies on Canadians to provide information and they in turn trust it to produce the data they need.

For over a century, this relationship has enabled the agency to produce statistics of a consistently high calibre. But as history has illustrated, this bond should not be taken for granted. Society is changing rapidly and with it, so is the very nature of trust.

### 3. The Evolving Dynamic of Trust

Recent history has been characterized by an interesting phenomenon, in the form of a global loss of trust in public institutions. An increasing tendency to question the assessments and decision-making of traditional, “expert” sources means that these voices are losing their power and influence in public discourse.

The Edelman Trust Barometer—an annual credibility survey of more than 33,000 people in 28 countries—has revealed that “trust is in crisis around the world”.<sup>5</sup> In 2017, Canada, a country that had historically been “neutral” slipped in the “distruster” category.<sup>6</sup> Similarly, the 2018 Democracy Perception Index—a survey of 125,000 people across 50 countries—indicated that 64% of people living in democracies “think their government ‘rarely’ or ‘never’ acts in the interest of the public.”<sup>7</sup>

This skepticism extends beyond government to include the business sector, academia and the media. The 2018 Democracy Perception Index also revealed that a majority of respondents (56%) across all 50 countries surveyed “say that the news they read ‘rarely’ or ‘never’ gives them a balanced or neutral view of the world.”<sup>8</sup>

From the perspective of Statistics Canada—an organization that operates on a foundation of trust—such a notable decline in general public confidence should give pause. More specifically, we must ask ourselves: what is the underlying cause of this deterioration and what are the implications for an NSO?

One important consideration, as mentioned at the outset, is that trust itself is not static; it is a fluid concept that evolves in response to major societal change. And the transformation that has taken place over the past few decades has been nothing short of exceptional. We have entered an era of formidable change, where the dynamic of trust between society and the NSO is once again being challenged.

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<sup>5</sup> “2017 Edelman Trust Barometer” [online]. Available at <https://www.edelman.com/trust2017/>

<sup>6</sup> “2017 Edelman Trust Barometer, Canada” [online]. Available at [http://blogs.ubc.ca/comm386rmilne/files/2017/11/2017-Trust-Barometer\\_Canada\\_BC\\_2017\\_UBC.pdf](http://blogs.ubc.ca/comm386rmilne/files/2017/11/2017-Trust-Barometer_Canada_BC_2017_UBC.pdf)

<sup>7</sup> “Democracy Perception Index 2018” [online]. Available at <http://www.allianceofdemocracies.org/wp-content/uploads/2018/06/Democracy-Perception-Index-2018-1.pdf>

<sup>8</sup> “Democracy Perception Index 2018” [online]. Available at <http://www.allianceofdemocracies.org/wp-content/uploads/2018/06/Democracy-Perception-Index-2018-1.pdf>

### **3.1. The Drivers of Change**

#### *3.1.1. Proliferation of data sources and escalating user demands*

The most evident change has been the increasing ubiquity of data. From financial transactions and tax returns, to smartphones and social media, most of our activity is now leaving a digital trace. As a result, information is proliferating in near real-time and data providers are multiplying exponentially. Where data was once more or less the exclusive domain of an NSO, we now see private sector companies, other public organizations and even individuals producing various forms of statistical information, crowding out reputable agencies. In this new environment, there is very little to no distinction between quality and non-quality statistics and the result is exposure to misinformation.

Internet access and the ability to instantly seek an answer have also changed individual user expectations: there is now a demand for more timely information at a greater level of detail. Similarly, businesses need real-time data to help them thrive in a competitive market place. From information on the characteristics of clients, to the recruitment and retention of employees, the livelihood of many companies depends upon the availability of high quality, timely information. In short, expediency is taking precedence over statistical rigour, challenging the traditional approach to producing official statistics, and diminishing the relevance of the NSO.

#### *3.1.2. The rise of social media as a competing source of information*

The rising prominence of social media has also transformed the way in which information is produced and consumed. Platforms such as Facebook and Twitter have empowered individuals to provide statistical information in the absence of quality standards, quickly and with unprecedented reach, challenging the NSO and the power of its traditional dissemination channels. Anyone can now both access and publish their own views and statistics, and the power and influence of an individual data producer can be on par with—or even greater than—that of a reputable organization.

Social media has also led to the advent of so-called 'filter bubbles', a type of intellectual insularity. With website algorithms that can now selectively feed users information likely to appeal to them, based on elements such as location and search history, the result is a lack of exposure to alternative viewpoints. We now see the emergence of communities of likeminded people whose thoughts and opinions are being reinforced by a continuous feed of homogenous information. A by-product of social media is an increasing tendency to question trusted sources of information.

#### *3.1.3. Unprecedented demands on infrastructure, expertise and capacity*

The emergence of big data is complemented by an accelerating evolution of technology, in the form of automation and new tools that enable rapid and sophisticated processing and analysis. The emergence of artificial intelligence techniques like machine learning can extract more value from data, with algorithms that can now predict things like voting patterns and consumer behaviour. The capabilities unleashed by these technologies have made it difficult for NSOs to compete by relying exclusively on traditional approaches.

The development of modern statistical methods requires the adoption of advanced technology, including superior computing power. As a result, the NSO now faces

unprecedented demands to invest in upgraded infrastructure, to recruit or develop leading-edge expertise, and to obtain the large datasets needed to fully leverage the potential of new tools like artificial intelligence. Beyond the associated financial burden, these demands bring new challenges relating to privacy and cybersecurity to the forefront. These challenges are in turn compounded by the sense that we need to move quickly, while maintaining our commitment to transparency and quality.

#### *3.1.4. A growing need for targeted policy interventions*

The fourth driver relates to the growing complexity of socio-economic issues and the corresponding need for informed policy interventions. The relationship between vulnerable segments of the population and factors such as employment, education, housing, health and the justice system requires effective policy responses, which in turn is fueling a demand for integrated, high-quality and targeted data. The speed and level of detail at which this data is required cannot be achieved through traditional surveys alone. As a result, the NSO is left urgently seeking new and alternative sources of unstructured and complex data. These new data sources must then be assessed and organized in the context of specific issues and related statistics.

The current opioid crisis exemplifies this dilemma: while current statistics speak to the number of overdoses occurring in the province of British Columbia, there is insufficient information related to the socio-economic characteristics of those most at risk. Statistics Canada has partnered with the City of Surrey to address this conspicuous data gap, by using existing federal, provincial and municipal data in conjunction with our own linked administrative and social data. These efforts will assist our partners in identifying local, multi-sectoral interventions to better serve those most at risk in Canadian communities.

In an increasingly globalized and polarized society, the NSO will need to continue to respond to pressing information needs with these kinds of collaborative, multi-dimensional strategies. We must also be prepared to anticipate and address the many issues that accompany these novel approaches, including the procurement and linking of third party datasets, evolving privacy concerns, and challenges relating to dissemination.

### **3.2 An Impetus to Respond**

The sheer abundance of data and the acceleration of technological change have fundamentally altered the information landscape, while the demands on statistical organizations have increased dramatically. These challenges have emerged rapidly, and they carry sobering implications: if we cannot meet escalating demands for timely information, other less robust sources will fill the gap.

In an era of fake news and alternative facts, statistical literacy has become nothing short of vital. The NSO has a responsibility to serve as a data steward, supporting public discourse with information that is accurate, relevant, timely and accessible. With this in mind, Statistics Canada is responding with a long-term strategy to maintain public trust and strengthen its role as a key democratic institution.

## **4. The Modernization of Statistics Canada**

The agency has launched an initiative to modernize its approach to the entire production cycle—from collection and processing, to analysis and dissemination. The aim is to

create a more responsive organization that can meet the evolving information needs of Canadians.

#### **4.1. Pillars of Modernization**

Our approach to modernization is based on five pillars:

##### *4.1.1. User-centric service delivery*

The agency is adopting a more user-centric approach to service delivery, by consulting with the public to better understand their information needs and investing in programs to fill specific data gaps. For example, a new Centre for Gender, Diversity and Inclusion Statistics is addressing gaps in the availability of data on gender and other intersecting identities. We are also producing colourful infographics and interactive visualization tools to improve user accessibility and engage with a wider audience.

##### *4.1.2. Building statistical capacity and exercising leadership*

The second pillar is a focus on building statistical capacity and exercising leadership among Canadians. By sharing knowledge and expertise, we are empowering users to better understand and apply our data. In partnership with other organizations and post-secondary institutions, Statistics Canada has established the Data Liberation Initiative and an extensive network of Research Data Centres, to improve access to microdata, administrative data and linked data. Both programs include training and support components, to ensure users are able to effectively leverage these holdings.

##### *4.1.3. Sharing and collaboration*

Thirdly, Statistics Canada is enhancing its commitment to sharing and collaboration with clients and stakeholders. Many of the agency's programs are now being delivered using a collaborative approach that facilitates the open sharing of data, expertise and best practices. The new Canadian Centre on Transportation Data—a comprehensive information portal for transportation statistics launched in collaboration with Transport Canada—is a testament to the power of this approach.

##### *4.1.4. Adopting leading-edge methods and integrating data*

The fourth pillar is building and using leading-edge methods and integrating data. Faced with an influx of new technologies, Statistics Canada is looking beyond traditional surveys toward acquiring more administrative data and developing new, cost-effective methods to link and integrate those data. Over the past few years, the agency has increased its use of automated processing technologies, and has worked to reduce burden on respondents by introducing new and innovative collection methods, like web scraping.

##### *4.1.5. A modern and flexible workplace*

Finally, we are building a more modern and flexible workplace, giving employees the tools they need to take advantage of the wealth of opportunities available in a digital environment.

## 4.2. Pathfinder Projects

The five pillars of our modernization initiative are embodied in a series of pilot projects, where new and innovative approaches to producing official statistics are being tested. Each project is designed to respond to key policy priorities that reflect emerging information needs of Canadians, including: the legalization of cannabis; measurement of growth in international travel; housing statistics; and our transition to a low-carbon economy.

### 4.2.1. Cannabis

Late last year, Statistics Canada launched a project to produce statistics on cannabis, with the goal of ensuring that Canadians are well-positioned to understand the socioeconomic impacts of the approaching legalization of non-medical cannabis. Faced with the challenge of tracking the production, distribution and consumption of a substance that remains illegal, the agency combined a number of innovative approaches.

Data from several survey and administrative sources were used to produce national, provincial and territorial cannabis economic accounts, which provide estimates of the size of the cannabis industry in each jurisdiction. Data from a number of health and social surveys were also used to produce historical estimates of cannabis consumption.

Leading-edge, non-traditional collection methods were also applied. Firstly, to determine the price of illegal cannabis, a crowdsourcing site was launched, allowing Canadians to provide information on previous transactions, anonymously and securely. The StatsCannabis site was well-received, garnering more than 13,000 responses in the first week. To date, over 20,000 Canadians have participated.

Secondly, the agency has partnered with a number of municipalities to measure Canadians' consumption of cannabis through the analysis of municipal wastewater. In addition to allowing Statistics Canada to measure the size of the illegal market after the legalization of cannabis, this initiative will enable the agency to track the consumption of other illicit drugs, such as opioids, cocaine and amphetamines.

The data produced will provide a better understanding of the impact of cannabis on the Canadian economy and society, and will support the development of critical laws, policies and regulations at all levels of government.

### 4.2.2. International tourism growth measures

A project to measure growth in international tourism exemplifies Statistics Canada's commitment to developing strategic partnerships and integrating various data sources.

The agency has partnered with Destination Canada to improve tourism statistics, by acquiring administrative data from private sector companies, such as banks and telecommunications firms. This approach will vastly improve the quality of tourism data while also reducing burden on respondents.

We are also consulting widely with departments, organizations and the tourism industry to expand coverage of travel statistics in Canada, and have recently launched an initiative to collect tourism data in the Territories, in collaboration with organizations already



active in the North. The agency has updated its agreement with the Canada Border Services Agency to help promote and improve response rates to surveys among tourists at the borders.

Statistics Canada continues to explore the use of social media platforms as an alternative source of information on the origin, destination and characteristics of international and domestic travellers in Canada.

#### *4.2.3. Canadian Housing Statistics Program*

Innovative partnerships and big data are also key to the Canadian Housing Statistics Program, which has been created to address questions related to foreign ownership in the Canadian housing market.

Statistics Canada is working with various providers—including provincial and territorial governments and private sector firms—to acquire large administrative data files, and is creating a comprehensive database that includes information on the income, sex, education and citizenship of residential owners, as well as the debt loads and financial risks associated with mortgages.

The agency has partnered with the Canada Mortgage and Housing Corporation in coordinating data releases, in order to meet specific information needs of Canadians and key stakeholders.

#### *4.2.4. Transition to a low-carbon economy*

The final project addresses a need to develop data to track the role of clean technology in Canada as the country transitions to a low-carbon economy. Key partnerships were established with federal departments to develop a linkable file environment that will enable the agency to better leverage the data holdings that are available across different departments, and to create research datasets that can shed light on new and emerging clean technology sectors.

Late last year, Statistics Canada published new data on the sale of environmental and clean technology goods and services. The agency has also expanded collection activities to produce the Clean Technology Satellite Account. This latest release was the result of strategic partnerships with Natural Resources Canada, Innovation, Science and Economic Development Canada, Environment and Climate Change Canada, and other federal partners and experts. The purpose of these partnerships was to gather data efficiently and strategically by leveraging existing holdings across government.

### **4.3. Lessons Learned**

As with any major transformation, the push toward modernization has revealed some important early lessons, the first of which has been the need for a considerable shift in culture. Like most NSOs, Statistics Canada is inherently conservative. More specifically, we operate on the basis of consensus and adherence to methodological principles and detailed frameworks, resulting in a stable but generally sluggish production cycle. There is a pressing sense that this cycle must be adapted to align with the pace of change today.

The agency is now deeply focused on innovation, and has altered its operational paradigm to support this priority.

A culture centered on innovation must embrace risk and accept that a certain percentage of failure is both inevitable and necessary in this context. With this in mind, we are working to create space for employees to pursue new ideas, and encouraging a sense of resilience amongst staff. Whereas traditional hierarchies can stifle creativity, the expectation moving forward is that management will facilitate rather than inhibit innovation. In this environment, the very notion of what a statistician looks like is being redefined: beyond traditional domain expertise, the statistician of today must have a solid grasp of emerging technologies and an ability to think outside the box.

A second lesson has been the importance of avoiding the trap of false dichotomies. For example, as timeliness becomes a growing priority, it is easy to be lured into thinking that improvement in one area necessarily entails sacrifice in another. However, timeliness and quality today need not be mutually exclusive. The 2016 Census exemplifies this notion: the application of an electronic questionnaire proved that it is possible to produce higher quality data quicker and at a lower cost.

Perhaps the most important lesson is the idea that modernization is not a destination, but an ongoing effort. Society will continue to evolve and Statistics Canada will need to continue to adapt. Modernization is not about seeking to reach a particular goal; it is about building a framework—and a degree of flexibility—that enables us to continually respond to change.

## 5. International Engagement on Modernization

Statistics Canada is not alone on this journey. Other countries have also begun restructuring their statistical production process in response to technological change and the growth of digital information.

In May 2016, the United States published *The Federal Big Data Research and Development Strategic Plan*. In March 2017, the United Kingdom published the comprehensive *UK Digital Strategy* policy paper, setting out plans for the development of a “world-leading digital economy that works for everyone.”<sup>9</sup> The Australian Bureau of Statistics is investing significantly to modernize its infrastructure, and New Zealand has recently announced its intention to increase by tenfold the value of its data by 2030.<sup>10</sup>

In this context, international engagement through initiatives like the High-Level Group for the Modernization of Official Statistics (HLG-MOS) remains imperative. Established by the Conference of European Statisticians, the HLG-MOS provides a collaborative platform for members to identify trends, threats and opportunities in modernizing statistical organizations. The HLG-MOS is focused on cutting-edge development, overseeing projects aimed at improving the efficiency of production, and helping statistical organizations communicate more effectively and better meet user needs. As an

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<sup>9</sup> “UK Digital Strategy” [online]. Available at <https://www.gov.uk/government/publications/uk-digital-strategy>

<sup>10</sup> “Stats NZ’s Annual Report for the year ended 30 June 2017” [online]. Available at <https://www.stats.govt.nz/assets/Uploads/stats-nz-annual-report-2017.pdf>

active member since this group's inception in 2010, Canada currently chairs the HLG-MOS and serves as co-chair of the Executive Board.

Statistics Canada is also a long-standing member of the Conference of European Statisticians, the United Nations Statistical Commission, and the Organisation for Economic Co-operation and Development.

As a leader in modernization, the agency is pioneering these efforts alongside likeminded nations. Statistics Canada is energized by the successes of its counterparts and we look forward to sustaining these collaborative relationships moving forward.

## **6. Looking to the Future**

In the field of statistics, these are times unlike any other. Digital information is proliferating, technological change is accelerating and new players are entering the data sphere every day. In some ways, the NSO is now at a turning point, faced with the choice between obsolescence by design and adaptation. However, raw information does not turn itself into statistical insights. Emerging data providers will find themselves increasingly burdened by the task of figuring out how to manage confidentiality, how to deal with sample biases, how to generate aggregate information, and how to disseminate statistics effectively. By contrast, this is what an NSO does each and every day.

For 100 years, Statistics Canada has played an active role as a key institution in our democratic system, largely due to the trust we have continued to build with Canadians. Throughout our history we have met challenges head-on, by keeping abreast of trends and investing in our expertise, consulting with the public to understand emerging information needs, responding strategically and collaboratively, and exercising strong leadership.

In the context of an increasingly data-driven world, we are once again at a challenging juncture, marked by both an obligation and an opportunity to continue to lead in the realm of statistics. With a century of expertise behind it, the agency looks to the future with a sense of optimism: we know our best days lie ahead.