

The evolution of Statistics Canada's stance on Fundamental Principles of Official Statistics: from peripheral to central

Fundamentalne zasady statystyki publicznej w praktyce Statistics Canada – od znaczenia marginalnego do kluczowego

1. Introduction

The importance of the activities undertaken by national statistical organizations may appear to be obvious to some, but it has not always been the case. Although data and official statistics have become prominent in decision making, it is not guaranteed that this will always be the case. Social and political contexts evolve and, for societies to protect themselves against negative drift, there must be a number of elements in place. An obvious set of such elements is made up of laws that govern society in one way or another. Legal codifications of philosophical and societal aspirations are needed for the foundation of a well functioning society. Further, as Oleński (2003) argues, freedom is based on truth, and the right to truth is fundamental. This implies a need for quality criteria and standards to protect this right to information for citizens. He pledges that: “official statistics seems to be the proper basis for that”.

When a number of eastern European countries transitioned away from a centrally managed economy, they required quality information to guide them into effective decision making and they needed to have a valid picture of their societies. It is precisely for this purpose that the Fundamental Principles of Official Statistics (FPOS) came to light at the initiative of the Conference of European Statisticians in the early 1990s (United Nations [UN], 2024). The FPOS were then approved globally by the United Nations Statistical Commission in 1994. Twenty years later, a crucial milestone was reached when the FPOS were endorsed by both the UN Economic and Social Council in 2013 and by the UN General Assembly in 2014 (UN Economic Commission for Europe [UNECE], 2015). This now meant that not only were the FPOS endorsed by statisticians, but also by politicians and their respective countries. Then, to help implementation, guidelines were produced by a UN Statistical Commission's Friends of the Chair committee in 2015 and revised in 2020 when a maturity model was developed to assess the implementation level of FPOS in countries (Milichich et al., 2021). The FPOS are guiding national statistical offices

(NSOs), but one could go even further and consider principles that should guide a country or state in how to deal with official statistics. Such principles are well described in Radermacher (2019), but the focus of this paper is about guiding NSOs.

The FPOS, which have been in place for over three decades, are now featuring prominently in Statistics Canada's governance and business activities. However, this is not how things started. When they were created over 30 years ago, the FPOS were not seen as being necessary for the Agency which had already established itself as a recognized organization with solid principles. Changes in context and a number of events have led to a more explicit adoption of the FPOS.

In this paper, we look at Statistics Canada's adoption of the FPOS, how some of them are already part of the new vision, and how some need more work. A brief history of the gradual adoption of the FPOS at Statistics Canada is provided, as are some of the implemented elements in support to each of the ten principles. The paper identifies principles for which the implementation could be strengthened and points out how these are integrated into the vision of the organization.

2. The FPOS and Statistics Canada

Since its early beginnings over 100 years ago, Statistics Canada has always sought to anchor its work on international standards and practice. The Bureau and now the Agency¹ has always been very active internationally, developing, sharing, adopting, and implementing principles to guide its work. Thanks to solid data, infrastructure, and methods developments, in particular from the mid 1980s to the early 1990s, Statistics Canada became a worldwide recognized national statistical organization of the highest quality ("Economics Brief – Good Statistics Guide", 1993; "Economist Good Statistics Guide Assesses Accuracy of Figures", 1991).

As the FPOS were developed and adopted, Statistics Canada's view about their adoption evolved significantly. The following is a characterization of the various steps of this evolution.

2.1. FPOS: Peripheral

In the early 1990s, the FPOS were essentially viewed as a framework to guide eastern European countries, and as such, they were not considered to be very useful for Statistics Canada. In fact, the view was that more generally for any country such basic truths should not have to be spelled out to be followed (Bodin, 2023). Further, the country had just become, according to *The Economist* ("Economics Brief – Good Statistics Guide", 1993; "Economist Good Statistics Guide Assesses Accuracy of

¹ From 1918 to 1970, the National Statistical Office in Canada was known as the Dominion Bureau of Statistics. Statistics Canada was established in 1971.

Figures”, 1991), the number one NSO in the world, so that it was felt at the time that the framework could be redundant to the principles already in place. Indeed, Statistics Canada already had elements that touched on each of the principles. Fellegi (1995) provided an account of these by describing the characteristics of an effective statistical system.

2.2. FPOS: Potentially useful

In 2010, the government of Canada decided to cancel the long form census. This led to the resignation of the Chief Statistician and created much debate about the independence of Statistics Canada. At the time, the previous Chief Statistician Ivan P. Fellegi (2011) said: “Well, I have maintained and recommended that the fundamental principles of official statistics that were adopted by the United Nations should be basically incorporated in the Statistics Act. That would make decisions of methodology independent of political interference”. This was a significant change from the position held almost 20 years earlier.

2.3. FPOS: Implicit

In 2012, the UNECE started working on the renewal of the FPOS with a view to bringing evidence that would convince their adoption at a higher level than the UN Statistical Commission. The Conference of European Statisticians gathered testimonies from countries. At that point, Statistics Canada had still not adopted the FPOS and felt that all its principles were now fully engrained into its work. The Agency provided this answer: “The Fundamental Principles represent values that are entrenched in our organisational culture. A great number of our staff do not have a conscious knowledge of the actual Principles, but despite this, their behaviour is fully consistent with them” (UN, 2012).

2.4. FPOS: Endorsed

In 2013, when the UN Economic and Social Council endorsed the FPOS and that it was pretty well known that the UN General Assembly was highly likely to do likewise, Statistics Canada immediately endorsed them and made this public by adding a note to this effect on its website. Further, the Agency prepared a video (Statistics Canada, 2014) showing how each of the principles were present in the work of the Agency. So, by 2014, FPOS were now officially part of Statistics Canada’s frameworks but only in a descriptive fashion.

2.5. FPOS: a Training Tool

By 2016, a few more people at Statistics Canada had become aware of the FPOS and they were starting to be increasingly mentioned. Then, as part of a technical assistance project which was concluding that year, Statistics Canada produced a compendium of management practices as training material. The compendium explicitly drew from the FPOS and had an entire chapter on them (Statistics Canada, 2016).

2.6. FPOS: a Guide Post

In the years that followed the adoption of the FPOS by the General Assembly, the UN Statistical Commission had a Friends of the Chair Group that looked at producing implementation guidelines. Statistics Canada did not participate in this group but provided extensive comments at each step. Then in 2022, on the 30th anniversary of the creation of the FPOS, 10 countries were asked to prepare a testimony video to showcase the importance of each of the principles. Canada quickly volunteered to produce the first one on Principle 1: Relevance, impartiality and equal access. The video (Statistics Canada, 2022) features a number of Canadian officials emphasizing the importance of data, statistics and the FPOS. At that point, as seen in the video, the FPOS had become a “Guide post” for statisticians.

2.7. FPOS: Central

In May 2024, the Chief Statistician announced that the FPOS would now be central to Statistics Canada's way forward. This shift in emphasis in the vision for Statistics Canada implies an increased focus on the core business of official statistics. That is, producing relevant and quality information, ensuring that it is sustainable through the use of new methods and standards that are efficient, and that strong related expertise is maintained and nurtured to achieve this. Thus, Statistics Canada has gone through the Carson (1998) two undertakings to foster the FPOS after adopting them, namely, publicizing them; and now providing an infrastructure to foster good decision-making.

3. Depth of the implementation of the FPOS

This section presents a few elements that show how each of the FPOS is implemented at Statistics Canada. It is not meant to be an exhaustive list of every activity related to the FPOS. For example, a more complete list of elements that existed in 2016 can be found in Statistics Canada (2016). Using the UN implementation guidelines similarly to Milichich et al. (2021), Statistics Canada's maturity in the implementation of each

principle is characterized² as developing, practicing, or leading. The criteria used are those which can be found in the UN guidelines (UN FOC-FPOS, 2020) and a summary table is provided in the Appendix. The objective is primarily descriptive and not meant to constitute a prescription on what to change or improve. As well, it is not a compliance assessment. Nonetheless, it should provide some insight on strengths and areas where improvements can be made to reach the next level of maturity.

3.1. Principle 1: Relevance, impartiality and equal access

Statistics Canada's mandate covers widely all social, economic, and environmental aspects of society. As part of its plan, Statistics Canada (2024b) provides a large variety of statistics. To ensure relevance, the Agency strives to constantly augment its output to respond to the various needs for data. The Agency mostly provides its information through its Daily website.³ In the last few years, the provision of relevant information significantly increased through the creation of a number of themed data hubs on topics such as poverty, quality of life, food prices, transportation, energy, internal and international trade, and infrastructure, to name a few. The poverty hub⁴ provides a good example of such a data offering.

To ensure relevance, Statistics Canada has a well-established network for consultation. The highest level of consultation is the Canadian Statistical Advisory Council which produces an annual report (Statistics Canada, 2023). The council is complemented by a series of subject matter advisory committees. The Agency also regularly conducts numerous federal-provincial-territorial consultations. It also maintains direct relations with other departments at all levels as well as with academia. For each domain, close partnerships are in place to develop the needed data programs. Statistics Canada provides equal access to its data to all Canadians with the systematic release of information on the Daily each morning at 8:30 a.m. Further, the publication schedule is made public well in advance of any release to ensure timing be and be seen as impartial.

Statistics Canada provides embargoed pre-release access to its products only to a specific and well controlled short list of users. All data released are free of charge, except for specifically requested analyses and custom tabulations. Analyses produced by Statistics Canada are non-partisan and present an objective view based on facts. The choice of data sources and methods is dictated by professional statistical considerations and changes in methodology are announced to users in advance of

² This characterization of the implementation is that of the author, it is not from an independent review and it is not necessarily Statistics Canada's official position.

³ <https://www150.statcan.gc.ca/n1/dai-quo/index-eng.htm>.

⁴ <https://www.statcan.gc.ca/en/topics-start/food-price>.

being implemented. Also, Statistics Canada has an internal directive on corrections to releases as well as a directive on media relations for correction of wrong uses.

In terms of human resources, the appointment and rules concerning the Chief Statistician are in part specified in the 1985 Statistics Act (revised in 2017). For the employees, Statistics Canada has clear and well-established procedures for hiring and promotion. As well, there are agency-level and government-level training available to all employees.

For this principle, the FPOS implementation maturity level is considered to be: Leading.

3.2. Principle 2: Professional standards and ethics

At Statistics Canada, all methods and approaches are subject to both internal and external scrutiny. Internally, new methods are presented before a scientific review committee and externally to the Advisory Committee on Statistical Methods. This committee is made of internationally renowned experts. Ethics is organized around a data ethics framework (Marcovitch & Rancourt, 2022). As part of this, there is an external council on ethics that oversees the potential impacts of new developments and advises the Agency. Internally, there is training provided to employees both on methods and on ethics. Further, there is an internal data ethics committee supported by a secretariat to provide guidance to all employees.

Statistical decisions are guided by a number of frameworks that have been developed and implemented at Statistics Canada. Methods are supported by quality guidelines (Statistics Canada, 2019) that have been updated to stay abreast of the evolution of methods and techniques. Decisions related to sensitive, ethical, and social issues in either of the Gather, Guard, Grow or Give steps of the data life cycle (Rancourt, 2019) are driven by the Necessity and Proportionality Framework (Statistics Canada, 2022). Further, a responsible Machine Learning framework has been developed to guide data science decisions related to the use of automated algorithms.

Statistics Canada is working closely with all its partners of the national statistical system to help and support them with data collection, methodologies, and analysis. Three main groups are achieving this: a special surveys unit in each of the economic and the social statistics fields, as well as a statistical consultation unit on the methodology side. Further, the Questionnaire Design Resources Centre is also providing assistance to programs and other departments that need their support.

For this principle, the FPOS implementation maturity level is considered to be: Leading.

3.3. Principle 3: Accountability and transparency

Processes to report quality and methods are clear. As it releases statistics and information, the Agency makes sure to inform users of quality or any change and follows a well-established policy on informing users of data quality and methodology (Statistics Canada, 2000). Information about data and metadata is also made available to users upon release, and in some cases, such as for the Census, even prior to releasing data. In the case of major programs (Census, Labour Force Survey), there are also user guides that are made available.

To go even further, Statistics Canada established a Trust Centre,⁵ which informs Canadians on the plans to collect information and use administrative and alternative data sources, on its Necessity and Proportionality framework (Statistics Canada, 2022) and on ethics.

For this principle, the FPOS implementation maturity level is considered to be: Leading.

3.4. Principle 4: Prevention of misuse

Statistics Canada has a Directive on Media relations which covers the monitoring and reporting of inaccuracies. When inaccuracies are detected, Statistics Canada often contacts the authors to provide explanations and request adjustments. Such comments and interventions are rarely public. Also, the interventions are for wrong numbers cited or errors. As far as interpretation that could be seen as misinformation or disinformation, the line has been somewhat blurred, and it is not always clear when/if to intervene. Occasionally, some training and support has been provided on the adequate use of Statistics Canada data, but this has not been systematically happening.

For this principle, the FPOS implementation maturity level is considered to be: Practicing.

3.5. Principle 5: Cost-effectiveness

Statistical programs have been using administrative and alternative data where appropriate for many decades. Since 2017, under Statistics Canada's modernization efforts (Arora, 2018), programs have augmented their efforts to use administrative data. This is described as the admin 1st paradigm in Rancourt (2018). To support programs, there is a centralized team managing administrative data acquisitions and they maintain strong relationships with data providers. Further, there is a strong data governance in place for all steps of the data life cycle of statistical programs.

⁵ <https://www.statcan.gc.ca/en/trust>.

When estimates are produced, Statistics Canada is guided by its Quality Guidelines (Statistics Canada, 2019), which are based on six dimensions of data quality. Part of these is coherence, an element of this principle. Further, harmonization across programs does take place as standard concepts and definitions are used across the Agency (Statistics Canada, 2024b).

For this principle, the FPOS implementation maturity level is considered to be: Leading.

3.6. Principle 6: Confidentiality

Confidentiality protection has always been a hallmark at Statistics Canada. The Statistics Act is clear on this, and it is complemented by a series of processes in place, from training to technical documents, approaches, and security measures. Upon being hired, all employees must take an oath of non-disclosure as specified in the Statistics Act and take confidentiality training. Further, all employees need an identity security card to enter the premises of the organization. When the card expires, employees must take again their confidentiality training to renew their card.

In terms of data access by researchers, it is necessary for all of them to submit their results and output to a strict set of verification procedures in order to vet their results and determine which part can be brought back with them. As for security, Statistics Canada has a complete system of data security both physical in terms of the organization's buildings, and digital in terms of all aspects of data access, monitoring, de-identification, encryption, and cloud infrastructure.

For this principle, the FPOS implementation maturity level is considered to be: Leading.

3.7. Principle 7: Legislation

Statistics Canada has a very well-established law. It has some degrees of detail, and it has a number of the FPOS within it (e.g. relevance, confidentiality), but not all of them. The Statistics Act is publicly available.

For this principle, the FPOS implementation maturity level is considered to be: Practicing.

3.8. Principle 8: National coordination

The national statistical system is dominated by Statistics Canada, given its mandate in the production of official statistics. However, Statistics Canada is not the sole producer of such statistics and coordination is complex since Canada is a federation of provinces and territories with sectoral authority found at different levels. Although

mechanisms are in place for coordination of the National Statistical System, more development is required to make it more effective. Further, the governance for coordination is shared with stakeholders and it is separately organized for a number of topics.

For this principle, the FPOS implementation maturity level is considered to be: Practicing.

3.9. Principle 9: International standards

Statistics Canada is a proactive user of international standards and methods. As new standards are developed, Canada is often among the early adopters. It is also an actor heavily involved in the development of international standards. Further, the use of standards is strongly promoted across the national statistical system. At the federal level, Statistics Canada is teaming up with the Standard Council of Canada to promote the use of standards and in parallel, Statistics Canada has been heavily involved in the development and implementation of the *2023–2026 Data strategy for the federal public service* (2023). A large part of the work in this strategy is to get standards adopted across all departments.

For this principle, the FPOS implementation maturity level is considered to be: Leading

3.10. Principle 10: International cooperation

Statistics Canada is a major player in the international statistical system. It is involved in almost 200 committees and workgroups, including those of the major organizations such as the UN Statistical Commission, the UNECE and the Organisation for Economic Co-operation and Development. Statistics Canada is both a user and a contributor of international statistical developments and standards. Further, Statistics Canada has been involved in multiple technical assistance programs with many countries over the years.

For this principle, the FPOS implementation maturity level is considered to be: Leading.

3.11. Summary

The following table summarizes the characterization of Statistics Canada's maturity in terms of the level of implementation of the FPOS.

Table. Characterization of Statistics Canada’s FPOS implementation maturity

Principle	Practicing	Leading
1. Relevance, impartiality and equal access		√
2. Professional standards and ethics		√
3. Accountability and transparency		√
4. Prevention of misuse.....	√	
5. Cost-effectiveness		√
6. Confidentiality		√
7. Legislation.....	√	
8. National coordination.....	√	
9. International standards		√
10. International cooperation		√

Note. The implementation of all FPOS exceeds the Developing maturity level. Developing maturity level, presented in Milichich et al. (2021).

Source: author’s work.

4. Making the FPOS central

As discussed in Section 2.7, the FPOS are now a point of emphasis in Statistics Canada’s strategic vision. The FPOS are general enough to provide a maneuvering margin that is broad enough to account for the Canadian data, statistical and societal reality and yet they are also precise enough to offer a solid anchoring point to decisions. Statistics Canada’s renewed vision (2024a) has three main dimensions that can each be linked to one or two of the FPOS. That is not to say that the other principles are not important, but rather that the emphasis of the work will be focused on these. They are, with the corresponding principle(s):

- placing the focus on core business for quality and relevance – Principle 1 (Relevance);
- ensuring program sustainability – Principle 5 (Cost-effectiveness) through new methods and standards for efficiency – Principle 9 (International standards);
- maintaining a strong expertise and ethics – Principle 2 (Professional standards and ethics).

These priorities correspond to FPOS principles that are already very strongly implemented at Statistics Canada. Each of these have a maturity level where Statistics Canada is leading. It could be argued that this is not where efforts need to be made, but on the contrary, they represent foundational areas that define national statistical organizations. Further, as society continues to evolve, NSOs cannot fall behind in those areas. In parallel, there are three principles where Statistics Canada’s implementation can be characterized as Practicing. They are:

- Principle 4: Prevention of misuse;
- Principle 7: Legislation;
- Principle 8: National coordination.

In order to lead for Principle 7, one would have to have all elements of the FPOS enshrined within the Act. This is not the case in Canada, and it would not be the sole purview of the NSO to change. On the other hand, looking at the other two principles, these areas can be considered for further improvement, and this is why Statistics Canada engaged its councils⁶ in related discussions to identify the way forward. As well, a small unit for coordination of the national statistical system has been created within Statistics Canada. These initiatives are all aiming to help Statistics Canada increase its implementation maturity level for these principles.

5. Conclusion

Statistics Canada's path to adopting the FPOS has been slow but steady. History has shown that the FPOS can be very useful and can provide the solid anchoring that is needed in difficult times. So, it is important to seize the occasion when the context is stable to increase the depth of FPOS adoption such that they be solidly in place when needed. Today, Statistics Canada has many more elements in place in support of each of the FPOS than it had for example 10 or 15 years ago when they could have served more efficiently. Countries should tap on the fact that the FPOS have not only been adopted by statisticians but also by the politics. A more explicit use of the FPOS should provide clarity to decisions and directions. Also, even with changes in context with developments and innovation, the FPOS provide an enduring central framework for official statistics.

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⁶ The Canadian Statistics Advisory Council (CSAC); the Advisory Council on Ethics and Modernization of Microdata Access (ACEMMA).

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Appendix

Table A. Simplified maturity criteria

Principle	Developing	Practicing	Leading
1. Relevance, impartiality and equal access	<ul style="list-style-type: none"> • Consultation awareness • Limited data access • Limited downloads • No information on upcoming releases • Limited appointment rules for Chief Statistician • Pre-release • Limited free data • Not always free from politics • Choice of methods not always free • Changes not public • No error reporting • Recruitment and promotion not always objective • Limited training 	<ul style="list-style-type: none"> • Regular consultation • Some data access • Propriety formats • Pre-announced releases • Clear appointment rules for Chief Statistician • Pre-release to some groups • All free, exceptions • Objective production • Choice of methods free • Changes public, no notice • Error reporting • HR system in place • Training available 	<ul style="list-style-type: none"> • Partnership • Full data access • Open format • Pre-announced releases and changes • Clear appointment rules with specifics for Chief Statistician • Pre-release to some groups with controls • All free, pricing clear • Objective production and release • Choice of methods free and recognized • Changes public, notices • Revision policy • Professional open processes based on expertise • Training and development

Table A. Simplified maturity criteria (cont.)

Principle	Developing	Practicing	Leading
2. Professional standards and ethics	<ul style="list-style-type: none"> • Awareness of need for standard methods • Guidelines on ethics • Awareness of peer reviews • Awareness of standards 	<ul style="list-style-type: none"> • Use of standard methods mostly • Training on ethics • Peer reviews • Use of standards 	<ul style="list-style-type: none"> • Use of standard methods • Training on ethics and use assessment • Expert advices • Promotion of standards
3. Accountability and transparency	<ul style="list-style-type: none"> • Some quality notes provided • Limited quality reporting • Limited information on change 	<ul style="list-style-type: none"> • Framework for quality reporting • Quality information part of metadata • Information on major changes 	<ul style="list-style-type: none"> • Process for quality reporting is public • Quality reports always available • Always information on change
4. Prevention of misuse	<ul style="list-style-type: none"> • No intervention policy • Does not comment • Limited training 	<ul style="list-style-type: none"> • Intervention policy exists • Some comments • Some training 	<ul style="list-style-type: none"> • Policy exists, interventions made • Regular comments • Training
5. Cost-effectiveness	<ul style="list-style-type: none"> • Limited data sources • Limited or no liaison • Coherence not addressed • No oversight 	<ul style="list-style-type: none"> • Admin data used • Relationships • Some coherence coordination • Harmonization important 	<ul style="list-style-type: none"> • Admin data used and governance in place • Pro-actively seeking opportunities • Coherence a priority • Harmonization in place
6. Confidentiality	<ul style="list-style-type: none"> • Policy • Policy provided to staff • Some access conditions • Security provisions 	<ul style="list-style-type: none"> • Policy and guidelines • Signed commitment • Established procedures • Security provision based on standards 	<ul style="list-style-type: none"> • Comprehensive system • Signed commitment and training • Strict conditions and monitoring • Sophisticated modern security in place
7. Legislation	<ul style="list-style-type: none"> • General law • Hard to find 	<ul style="list-style-type: none"> • Law with some FPOS • Publicly available 	<ul style="list-style-type: none"> • Law with all FPOS • Publicly available
8. National coordination	<ul style="list-style-type: none"> • Awareness • Split governance 	<ul style="list-style-type: none"> • Some coordination • Limited central governance 	<ul style="list-style-type: none"> • Across system • NSO is recognized leading body
9. International standards	<ul style="list-style-type: none"> • Main concepts used • Should be promoted 	<ul style="list-style-type: none"> • Concepts used, some new versions in place • Promoted 	<ul style="list-style-type: none"> • Concepts used, some new versions in place • Promoted, contributed to development
10. International cooperation	<ul style="list-style-type: none"> • Some participation 	<ul style="list-style-type: none"> • Active participation 	<ul style="list-style-type: none"> • Continuous contribution

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