



**Economic and Social  
Council**

Distr.  
GENERAL

CES/2004/11  
3 May 2004

ENGLISH ONLY

---

**STATISTICAL COMMISSION and ECONOMIC COMMISSION FOR EUROPE**

**CONFERENCE OF EUROPEAN STATISTICIANS**

Fifty-second plenary session  
(Paris, 8-10 June 2004)

**MAINTAINING THE CREDIBILITY OF OFFICIAL STATISTICS**

Invited paper submitted by Statistics Canada<sup>1</sup>

**INTRODUCTION**

1. To be effective a statistical agency must be credible. If the statistical information that an agency puts out is not trusted, or is constantly being called into question, the effectiveness of the agency is seriously undermined, if not destroyed. Policy debates that require an agreed baseline of statistical information from which opposing parties can assess the impact of alternative proposals can turn into disputes about the underlying data. The agency itself, instead of concentrating on producing and improving its outputs, is forced to devote disproportionate time to defensive strategies to deal with criticism.

2. This is not to say that critical questioning of an agency's output must be avoided. On the contrary, critical questioning of statistical outputs, and the statistical agency's responsiveness to criticism, can be a valuable means of building up credibility - either the criticisms are seen to be wrong once the agency explains itself (which it certainly should do under almost all circumstances of external criticism), or the agency is seen to be taking steps to correct admitted weaknesses in its data.

3. Few users are themselves in a position to validate directly the data released by statistical agencies. They are dependent on the producing agency to indicate the quality of the published data as a basis for deciding whether it is fit for a particular use. If indicators of quality are not available, users have to rely on the reputation of the agency directly; if they are available, the indicators themselves must be trusted by users. In either event, credibility of the

---

<sup>1</sup> Paper prepared by Ivan Fellegi.

agency is essential if its products are to be trusted.

4. However, preserving credibility is not only about avoiding negative consequences. It can also confer on the agency a range of functions of huge potential public benefit. As a trusted “information broker” the agency can be asked to provide information which is designed to illuminate the effectiveness of government programs by measuring their outcomes. Such information can considerably increase the range of statistical output available to ground democratic debates about alternatives. In turn, in a “virtuous circle”, such clearly relevant outputs can further reinforce the credibility of the statistical agency (Fellegi, 2003).

5. The goal of a statistical agency must be to reach and maintain a state where the normal reaction of users, knowing that data originate from the statistical agency, is to assume that the data are trustworthy, objective, as accurate as the agency says they are, and therefore fit for use. Furthermore, users should expect that, if they do have any concerns about the data, the agency will be ready and willing to answer those concerns openly and take corrective action if necessary.

6. This paper focuses on measures that may help an agency reach this desired goal. We distinguish three broad sets of factors that have to be addressed in order to achieve and maintain credibility. The first are **structural** factors having to do with the legislative and organizational arrangements within which the statistical agency operates. They are factors that affect whether the statistical agency is seen to be free of political or other influences that might cause users to question the objectiveness of its outputs. They are as much about avoiding the appearance of influence as about avoiding influence itself. The second set of factors we call **statistical** and they have to do with the way the agency collects, processes and publishes its data and manages the quality of those data. These are the factors that aim to ensure that the outputs of the agency deserve to be trusted, and are the factors over which the agency has the most direct control. Finally, there is a set of factors that we will refer to as **reputational**. They are aimed at ensuring that users, including importantly the media and the general public, see and appreciate that the outputs of the agency deserve to be trusted. Credibility is, to a considerable extent, a matter of perception.

7. In the following sections we enumerate factors that are important in each of these three categories in turn. Only brief statements about each factor are included here. More elaboration can be found in the references listed at the end of the paper. Attention to all three sets of factors is necessary for success. For example, while the statistical factors are at the heart of establishing the real integrity of the data, structural factors could undermine efforts to achieve that integrity, or they could put achieved integrity under suspicion. But, even if statistical integrity is achieved, credibility may not be achieved if the agency is unsuccessful in convincing users of its own integrity. Conversely, reputational factors cannot succeed in the absence of statistical integrity.

8. Many of the Fundamental Principles of Official Statistics (FPOS) that originated in the Conference of European Statisticians in 1991, and were subsequently adopted by the ECE and by the United Nations Statistical Commission (United Nations Statistical Division, 1994), are relevant to the building of credibility. In first defining those principles, the Conference was trying to identify the conditions necessary to ensure that official statistics developed in ways that would ensure their credibility, and therefore their usefulness. The particular measures

enumerated in this paper may be seen as elements in implementing some of these principles.

## **STRUCTURAL FACTORS**

9. The items covered under this heading relate to the legislative basis for the statistical agency, its relationship to Ministers and government, the independence of its Head, and its autonomy to make decisions.

(a) The statistical agency requires a clear and visible mandate providing it with the authority to collect data for statistical purposes (and only statistical purposes) and the obligation to protect the confidentiality of individual responses. The Agency must be seen as having the sole purpose of producing statistical information, so that there can be no grounds for suspicion that other objectives may be influencing the way data are collected, analysed, presented or used. The confidentiality requirement reinforces the fact that responses collected for statistical purposes cannot be used for administrative purposes, for which the identity of each respondent is crucial. Two of the FPOS, numbers 6 and 7 covering confidentiality and the legal basis, directly relate to this factor.

(b) Almost all statistical agencies are part of government and have some reporting relationship to the political authorities (Ministers, Parliament, etc.) chosen to run the country. For statistical credibility, it is important that this relationship be an arm's length relationship on statistical matters. Decisions on statistical issues, whether on content or methods, have to be seen to be free of political interference. On the other hand, it is equally important that the statistical agency take its reporting obligations to government on administrative matters very seriously, and be able to demonstrate that, in managerial, financial and personnel matters, it is a well-managed organization delivering value for money. Failure in this regard can undermine the credibility of its statistical outputs ("If we can't trust your management, how can we trust your statistics?").

(c) To reinforce the notion of an arm's length relationship, the head of the statistical agency should be seen to be appointed based on ability to lead a statistical agency and through a non-political process, and to be removable from office only for just cause.

(d) The head of the statistical agency must have sufficiently high hierarchical standing within the government bureaucracy to give weight, and lend credence, to his or her function of protecting the integrity of statistical information. In a centralized statistical system, (s)he needs to have sufficient access to the senior levels of government to ensure that the statistical program remains responsive to, if not anticipative of, the emerging information needs of the country. In a decentralized system, (s)he needs the authority to influence and ensure cohesion among statistical activities taking place across various ministries.

(e) While the previous points have focused on the agency's place within government, it is important to credibility that the agency be seen to be meeting the statistical needs of the nation, and not just those of the government. Of course the needs of government are a crucial part of the needs of the nation, since the government largely defines the issues and areas where changes affecting citizens may be made. In these areas, and others, the agency must be careful to provide objective information that is not distorted by the particular directions the government intends to pursue. In making program decisions (see 3 (b) below), the statistical agency must be sure to

consult broadly with clients outside the national government (including lower levels of government, business, academia, the media, unions and associations) to ascertain their statistical information priorities.

(f) An important element of credibility for a statistical agency is the principle of equal access to information. This element, which forms part of the first FPOS, implies that the statistical agency should not produce information for private or restricted purposes, but should publish all the information it produces, subject only to its professional assessment that the information is fit for use. Access should also be equal in terms of timing. Any pre-release that is seen to be essential (e.g. to allow Ministers to be prepared to answer questions on the day of release) should be strictly limited, carefully controlled, as short as possible, and subject to review if abused. Credibility would be seriously undermined if the statistical agency was thought to be feeding the government, or any other user for that matter, privileged information in advance, under the table, or exclusively.

(g) Finally, under this heading of structural factors, the arm's length relationship referred to above should particularly apply to the making of program choices within the budgetary envelope voted to the statistical agency. The agency must have the authority to make decisions about program changes based on its professional judgment, and taking into account the array of legislated, contracted and other obligations it is bound by. In practice, the degrees of freedom for reallocation are low in most statistical agencies given the need to continue core programs with limited budgets. If new resources are allocated and accepted for specific purposes they have to be used for those purposes, at least until the same purposes can be achieved more efficiently or, by mutual agreement, no longer exist. But those decisions to make changes on the margin should be driven by statistical considerations. Suspicion that a program or product had been cancelled because it was embarrassing to the government would be a serious blow to an agency's credibility.

## **STATISTICAL FACTORS**

10. The items covered under this heading aim to ensure that the statistical programs that the agency undertakes are chosen, funded, designed and implemented in an objective, professional way that is open to scrutiny and achieves an appropriate balance between the various aspects of quality, subject to budgetary and response burden constraints. They include quality assurance measures designed to avoid the publication of statistical outputs that contain errors, statements, or unexplained inconsistencies that could undermine the credibility of the agency as a professional and objective supplier of statistical information.

(a) As indicated earlier, if a statistical agency is to serve the information needs of the nation, it requires a broad and open consultative process on user needs. This may involve, for example, standing committees with some large and influential users, ongoing partnership relationships with major clients, ad hoc consultations on specific new initiatives, feedback from users of existing products, and evaluations focusing on the use and value of particular programs. The process of consulting with clients serves to enhance credibility among clients, especially when they see changes made in response to their needs.

(b) As also indicated earlier, the statistical agency must have authority to make program decisions. The process for making those decisions should be transparent and should allow

clients to see that their input is valued and used. In the end, decisions will have to be made based on the best judgment of the agency's management, and these will never satisfy every client's needs. However, a visible and open process has more chance of earning credibility than choices made by undefined means behind closed doors with the suspicion of influence lurking in the dark.

(c) The second FPOS, dealing with professionalism, calls for decisions on methods and procedures for collection, processing and presentation of statistical data to be made according to strictly professional considerations. This is at the heart of credibility. Users have to expect that sound objective statistical methods are being used throughout the agency, and that the resulting statistical information is being presented in an impartial way. Achieving this goal requires two preconditions. Firstly, the agency has to have the cadre of staff with the knowledge and ability to recognize and apply appropriate statistical methodology in different situations. Secondly, the organization has to develop a culture that expects and rewards professionalism in the development and application of methods and procedures.

(d) From the previous item follows the principle that statistical agencies should publish information about the methods and procedures used in producing statistics - the third FPOS. Not only does this information facilitate the correct interpretation of data, but it also adds credence to the agency's commitment to use objective statistical methods that are open to public examination.

(e) An extension of the previous factor is a parallel requirement to provide indicators of accuracy whenever statistics are published. This is more difficult than describing the methods used, and requires investment in accuracy measurement. It too not only facilitates interpretation of data but also reflects openness and honesty on the part of the agency with respect to the quality of its data. It is sometimes suggested that providing information about accuracy worries clients unduly and can undermine credibility – raising doubts where none existed. However, we believe that if there are doubts that should be raised, better the agency raise them than others.

(f) From time to time, an independent external review of a statistical program may be advantageous. This can arise when a program has come under criticism, when a program's outputs are showing unexpected patterns, perhaps inconsistent with other indicators, or when there are difficult methodological choices to be made. External reviews could be through existing advisory committees, knowledgeable consultants, or sometimes other statistical agencies. A willingness to undertake such reviews supports the credibility of the agency, quite apart from any benefits that accrue from the review itself.

(g) A fundamental consideration for any statistical agency is respondent privacy. By its nature, our survey work invades privacy and our challenge is how to minimize that invasion. The management of privacy stretches from what we ask in our surveys, and how we ask it, to what we keep on our databases and how we use it (Brackstone and White, 2001). Visible attention to privacy issues strengthens the credibility of the agency as an organization respectful of respondent concerns, asking only what is necessary, and using the data it develops appropriately.

(h) Although questionnaires are one aspect of methods already covered in 3(c), they deserve special mention. For many citizens, their only interface with the agency may be through survey questions. Their views on our objectivity may be formed by these questions, how they

are worded and how they are asked. Obviously we want to design questions that will be understood correctly and will generate truthful responses. The design and testing of questionnaires, and the training of the interviewers who may pose the questions, are important factors in ensuring that our interfaces with respondents reflect the objectivity which we mean our surveys to have. The use of standard questions across surveys can also help to avoid any suspicion that questions are being crafted to serve particular ends in different surveys.

(i) A potential threat to credibility is obvious inconsistencies in statistical data that cannot be explained. At a basic level, the use of edits to recognize and fix impossible combinations of values in individual responses is a standard process in most surveys to avoid statistical outputs that contain impossible cell values. A more difficult issue is where to draw the line in terms of unlikely combinations of values that are probably errors but may represent real but unusual events. In addition to micro-record checks, the examination of aggregate estimates as early as possible in the production process can help to identify problems that need to be fixed or explained prior to publication.

(j) Expanding on the previous point, analytic activity within a statistical agency serves several purposes. Important among these is its role in examining, integrating and generally challenging the data to ensure that they make sense and stand up to scrutiny when put into a broader context beyond the particular survey from which they come. This activity provides a level of quality assurance that serves to avoid publishing, without explanation, information that may appear to clients as inconsistent or contradictory to other findings. Analysis has other important functions which are mentioned in 4 (i). A particularly important analytic activity is the compilation of the System of National Accounts. Its feedback possibilities to the agencies (economic) statistics program should be consciously exploited.

(k) Broadening these approaches to quality assurance still further, a formal process of peer and institutional review of all statistical products helps to reduce the chance that information products that may undermine the credibility of the agency are released. Institutional review refers to a management review of outputs to ensure that the content, particularly commentary and analysis, is appropriate for a statistical agency to be publishing – in particular that it is objective, supported by the facts, and avoids advocacy. Peer review refers to an independent, professional review of proposed output to ensure that it satisfies accepted professional standards.

## **REPUTATIONAL FACTORS**

11. This section covers measures that an agency might take to reinforce in the public eye the fact that the agency's information outputs deserve to be trusted. To a large extent these items involve communications strategies designed to highlight and draw attention to the practices a statistical agency follows to remain objective.

(a) Pre-announcing release dates of regular publications serves to counter any suggestion that the timing of a release is being manipulated to favour any particular group, or to create or avoid embarrassment for them.

(b) Incorrect interpretations of agency data in the media should be challenged and corrected. This is important not only for the benefit of the readers who were misinformed, but

also to demonstrate that the agency is concerned about misuse of information. Depending on the impact of the error, the response could be through an individual reporter, a letter to the editor, or a more extensive article.

(c) Media reports sometimes involve more than misinterpretation and constitute criticism of the agency's actions or its data. In these cases, a response should be considered on the basis of the type of criticism, the merits of the case, and the potential damage to credibility of leaving the criticism unchallenged. If the criticism is in any part justified, it may be wise to indicate corrective actions that are being taken. Often an important purpose of the response is to convey a message to the offending journalist, not just to the readership or the audience.

(d) The agency should strive to ensure that it is properly credited as the source of its data wherever these are reproduced, especially in the popular media. This serves to keep the agency in the spotlight as a relevant contributor to important issues being covered in the media. In government publications by other ministries it may also be important to distinguish the agency's information from other information collected under different conditions.

(e) One means of achieving high visibility of agency information among an audience with future influence is to embed it in curricula within the education system. Working with educators at the school and college level, course material can be developed that introduces students to sources of official statistics as well as their use in particular disciplines. For the users of tomorrow to see how statistical data are crucial in their own fields of study may be one of the most important investments a statistical agency can make towards a goal of seeing statistics more widely used in decision-making. Some Canadian initiatives in this area are described in Podehl (2003) and Townsend (2003).

(f) The media are the main conduit through which most citizens receive statistical information (though the website may be challenging that position). It is important to ensure that daily releases for the media are written and presented in ways that can be picked up and used without change by the media, and that they accurately convey the main messages accurately. Explanatory training or seminars may also be offered to the media to assist them in using our data and understanding the measures we take to ensure objectivity.

(g) Consultations with users have already been stressed as an important element of program planning. Public consultations on particular issues or surveys provide an opportunity to demonstrate the agency's concern for ensuring its relevance, professionalism and objectivity.

(h) Members of Parliament are an important audience that must trust the statistical agency. The development of special products and services that fit the needs of their offices in a responsive way can serve this purpose. Statistical information organized on a constituency basis is one obvious possibility.

(i) The value of analytic activity in quality assurance within the agency was raised in 3(j). But analysis has other important roles to play. Insightful analytic outputs that serve to make clear the important and interesting findings contained in statistical results help to reinforce the image of the agency as a relevant institution contributing to important public policy issues. In publishing analytic outputs, it is important to differentiate the statistical agency's products from those of "the government". Their visible non-political objectivity should distance our products in the public eye from government publications having other purposes.

(j) Statistical agencies produce such a wide range of data for a wide range of clients that they will inevitably come under criticism from time to time. At such times it is important to have allies who will speak up on the agency's behalf. These need to be cultivated in good times so that they are there in bad times. Independent advisory committees, leaders in other ministries, in provincial governments or in client groups, are possible examples. Particularly important may be relationships with officers charged with responsibility for privacy, data protection, audit, and similar functions.

(k) The importance of attention to privacy concerns was cited in 3(g). Providing public information that reflects this concern can be of benefit. For example, instances of record linkage carried out can be listed on a website, as can measures of respondent burden imposed over time.

(l) Finally, a statistical agency's website is becoming the main centre for accessing the agency's data. A website that is attractive, easy to use, and error-free is clearly an important asset in retaining a reputation for credibility.

## CONCLUSION

12. This paper has suggested a wide array of factors that can be used to build, maintain and influence the credibility of a statistical agency. To summarize, using the terminology of this session, **credibility** is what we must seek in order to be effective as a statistical agency. To achieve credibility, we require both **independence** (as reflected in our discussion of structural factors) and **integrity** (as reflected in our discussion of statistical factors). But we also require attention to **reputational** factors to ensure that credibility deserved is credibility granted.

13. These days there appears to be, among many governments, an increasing desire for evidence-based decision-making, for greater transparency in funding allocations, and for measurable monitoring of results. This presents both a challenge and opportunity for official statistics. Two fundamental prerequisites to meeting this challenge are the trust of the public, and the relevance of our outputs. Earning and keeping the trust of the public is by far the more difficult. We clearly cannot earn public trust if we are lacking in the fundamentals of non-political objectivity, high standards of quality, respect for privacy and confidentiality, and transparency of methods. But these are not sufficient. We have to acquire a high enough public profile to be *noticed* – so that our image as distinct from *the government* can be perceived and appreciated. This certainly requires a style of statistical releases that concentrates on what is relevant, i.e. what the new information adds to our understanding of a particular phenomenon, rather than a recitation of dry numbers. In addition, though, the regular release of high profile analysis is essential for the achievement of the desired profile. These releases must address phenomena that are perceived to be relevant, but they must also be careful to avoid policy advocacy and policy criticism.

14. Finally, it is worth emphasizing that reputations can be lost faster than they can be built. Achieving credibility is an important goal, but maintaining it is equally challenging. Most of the measures outlined in this paper are measures that require ongoing attention in order to ensure that credibility is not undermined by isolated incidents or occasional accidents. In this respect, the strategies for responding to criticism and reacting to mistakes made, as described earlier,



take on particular importance.

## REFERENCES

Brackstone, G. (1999). "Managing Data Quality in a Statistical Agency". *Survey Methodology*, Vol. 25, No. 2, pp 139-149, December 1999.

Brackstone, G. and White, P. (2002). "Data Stewardship at Statistics Canada". CD-ROM Proceedings of the 2002 Annual Meeting of the American Statistical Association Joint Statistical Meetings, pp 284-293, New York City, New York, August 2002.

Fellegi, I.P. (1991). "Maintaining public confidence in official statistics". *Journal of the Royal Statistical Society, Series A (Statistics in Society)*, Vol. 154, Part 1, pp 1-6.

Fellegi, I.P. (1996). "Characteristics of an effective statistical system". *International Statistical Review* **64**, No.2, 165-187.

Fellegi, I. P. (2003). "Official Statistics – Pressures and Challenges". ISI President's invited paper, presented at the ISI Session in Berlin, August 2003.

Podehl, M. (2003). "Statistics in the Classroom - Learning to Understand Societal Issues". Paper presented at the 2003 International Statistical Institute Satellite Conference of the IASS, Berlin, German, August 2003.

Townsend, M. (2003). "Developing statistical literacy in youth: Statistics Canada's Education Outreach Program". *Proceedings of Statistics Canada Symposium 2003 Challenge in Survey Taking for the Next Decade*, October 2003.

United Nations Statistics Division (1994). "Fundamental Principles of Official Statistics". <http://unstats.un.org/unsd/goodprac/bpabout.asp>

\* \* \*