This document was approved by the General Assembly of FENStatS on 24 September 2024 as submitted for consideration by the FENStatS Executive Committee.

Professional Ethics for Statistical Practice in Europe

FENStatS Guidelines

1 Introduction

Statistical methods are powerful tools that have the potential to generate great benefits in various areas of application. They can provide information, help prepare decisions based on the best evidence, advance the empirical foundation of science and objectify public discourse. However, they can also be misapplied and misused to create confusion, to fabricate false 'alternative facts' and to create doubt in enlightenment, rationality and institutions. Statistical methods use data of individuals, families, companies whose interests in sensitive information must be protected. At the same time, the aim is to provide access to data, facts and figures to as many people as possible in a way that is FAIR (*GOFAIR 2016; Wilkinson 2016)* in the spirit of open data. Recognised ethical principles apply to scientific research, which can be of a procedural nature (reproducibility, no falsification or plagiarism, etc.) or also address intrinsic duties of ethically sound research conduct (choice of equations and variables, analysis of data, handling of error) or extrinsic risks (impact of research results on others, risks and side effects in application, dual use) (*Tuana 2010*).

As soon as statistics meets applications, the practitioner, be he or she from the statistics profession or from other scientific disciplines or professional areas, therefore has a great responsibility. Statistical practitioners should be prepared for this, which means that the ethical dimension with its values and principles must be taught in professional education alongside methodological knowledge and skills training. The Federation of European National Statistical Societies FENStatS is taking a step in this direction and presenting its initiative for professional statistical ethics in Europe. The approach draws on the corresponding Declaration of the International Statistical Institute (ISI) and promotes it for use in Europe.

2 The Purpose of Statistical Ethics - FENStatS' Ethical Mission

The key question is, why do statisticians need (professional) ethics at all? In the course of the rapid change in the data ecosystem, this question is being raised anew. Luciano Floridi / Mariarosaria Taddeo (*Floridi and Taddeo 2016*) and David Hand (*Hand 2018*) have developed convincing thoughts on this and have provided useful pointers, such as

> "Navigating between the Scylla of social rejection and the Charybdis of legal prohibition in order to reach solutions that maximize the ethical value of data science to benefit our societies, all of us and our environments is the demanding task of data ethics." *(Floridi and Taddeo 2016: 2*)

> "As far as ethical codes for data collection, manipulation, and use are concerned, these have various functions, including things such as the following:
> - providing guidance on how to behave in difficult circumstances;
> - preserving privacy in a way that users and the public will find acceptable;
> - ensuring that data are used in such a way as to benefit the public;
> - reassuring customers, the public, and others about an organization's integrity; and
> - reassuring employees that they work for a trust-worthy organization." (*Hand 2018: 178*)

And

> "However, the context of data science is so vast and diverse, and is changing so rapidly over time, that we cannot hope to put in place precise regulations. There cannot be a single and simple universal set of rules, and unexpected and unforeseen circumstances are certain to arise. The best we can hope for are some ethical principles that have to be interpreted or instantiated in particular applications. That is, the principles must be mapped to low-level guidance, and this is likely to be application specific. [...] At the highest level, the principles include such things as integrity, honesty, objectivity, responsibility, trustworthiness, impartiality, nondiscrimination, transparency, accountability, fairness, robustness, resilience, usability, efficiency, and independence. All good and desirable characteristics. These are then refined into lower, but still high-level principles." (*Hand 2018: 179*)

Obviously, these ethical values and principles are to be understood hierarchically, in such a way that the fundamental ones (i.e. values) should be as general as possible and thus robust against changes (e.g. through technologies) over time, while the guidelines derived from them are more precise, but also more in need of evolution/adaptation; similar to the situation in legal systems.

Depending on the area of application in which statisticians work, they will also encounter the ethical guidelines and specifications that are relevant there, be they general guidelines for scientific research (*Tuana 2010*), rules for professional conduct in the neurosciences (*Society for Neurosciences 2024*) or official statistics (*United Nations 2023*), to name but a few.

Which level of the ethical hierarchy and which characteristics are suitable depends on the intended purpose: Whether a relatively open conveying of values is intended (e.g. in statistics training) or whether, as in the Code of Practice of the European Statistical System (*Eurostat 2018*), binding rules are required with regard to compliance with which reviews and certifications are to be carried out.

FENStatS is focussing on the first level. The following objectives are being pursued:
- to support practitioners from a wide range of professions in dealing with questions and dilemmas as professionally and ethically correct as possible,
- to promote the awareness of professional ethics in European statistics (in research, teaching and all areas of application),

- to establish a binding European reference framework for certification by the European Statistical Accreditation,
- to foster and facilitate international co-operation between scientists and teachers of statistics in Europe and outside Europe.

Last but not least, FENStatS is also committed to enhancing the reputation of statistics and statisticians by promoting high professional standards.

3 Alignment and Harmonisation with the International Standard

FENStatS ensures that its objectives are compatible with international standards. For this reason, reference is made to the ISI Declaration of Professional Ethics (*International Statistical Institute (ISI) 2023*). This Declaration of Ethics dates back to the 1980s with a current version from 2010, which was updated in 2023 during the World Statistical Congress in Ottawa.

The ISI's Declaration on Professional Ethics consists of a statement of Shared Professional Values and a set of Ethical Principles that derive from these values. The Declaration emphasises the responsibility of statisticians:

> "Although not explicitly stated, the Principles inherently reflect the obligations and responsibilities of – as well as the resulting conflicts faced by – statisticians to forces and pressures outside of their own performance, namely to and from:
> • Society,
> • Employers, Clients, and Funders,
> • Colleagues,
> • Subjects.
> In carrying out his/her responsibilities, each statistician must be sensitive to the need his/her actions are consistent with the interests of each group and do not favour any group at the expense of any other, or conflict with any of the Principles."
> (I*nternational Statistical Institute (ISI) 2023*)

Ethical Principles – Declaration on Professional Ethics

Graphical overview of the twelve ethical principles in the Declaration on Professional Ethics
https://isi-web.org/declaration-professional-ethics

In parallel to the ISI Declaration, the Ethical Guidance for Statistical Practice of the American Statistical Association ASA (American Statistical Association (ASA) 2022) and the Code of Conduct of the Royal Statistical Society (Royal Statistical Society 2014) are well known in the statistical community and used by scientists. However, there should hardly be any difficulties, as these guidelines are very much in line with the content of the ISI Declaration. "Two documents from two professional statistical organizations should align closely, and these do. There is strong alignment between the ASA EG and the ISI DPE." (*Tractenberg and Park 2023: 17*)

4 Next steps towards a FENStatS Declaration on Professional Ethics (DPE)

This approach will be presented to the FENStatS General Assembly in September 2024 with the request that it be supported and approved. Following this formal decision, the Executive Committee will develop and deploy proposals for implementation, communication and promotion of the FENStatS DPE[1]. This will also involve cooperating closely with the ISI in order to utilise synergies as far as possible. For example, the list of language versions in which the ISI is currently available (including the English original 14 languages) could be enriched with other European languages through the support of our member organisations. In addition, this new standard will have to be incorporated into the accreditation procedures as a formal reference. Finally, the content of the ethics statement will be used in future activities relating to the training of statisticians.

[1] See the first FENStatS ethics webinar in April 2024 https://www.fenstats.eu/news/2024-04-11_webinar_on_ethics

Annex

DECLARATION ON PROFESSIONAL ETHICS – ISI
UPDATED VERSION
ENDORSED BY ISI EXECUTIVE COMMITTEE
17 JULY 2023
OTTAWA, CANADA

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DECLARATION ON PROFESSIONAL ETHICS

ADOPTED BY THE ISI COUNCIL
22 & 23 JULY 2010
REYKJAVIK, ICELAND

UPDATED VERSION
ENDORSED BY ISI EXECUTIVE COMMITTEE
17 JULY 2023
OTTAWA, CANADA

International Statistical Institute - Permanent Office
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http://isi-web.org

ISI Declaration on Professional Ethics

PREAMBLE, VALUES, PRINCIPLES AND BACKGROUND

FOR MORE BACKGROUND INFORMATION AND BIBLIOGRAPHICAL DETAILS (ENGLISH ONLY), PLEASE VISIT THE ISI WEBSITE HTTPS://WWW.ISI-WEB.ORG/BACKGROUND-DOCUMENTATION-AND-BIBLIOGRAPHY-ISI-DECLARATION-PROFESSIONAL-ETHICS

Disclaimer for translations: The English version serves as the reference document.

PREAMBLE

The ISI's Declaration on Professional Ethics consists of a statement of Shared Professional Values and a set of Ethical Principles that derive from these values.

For the purposes of this document, the definition of who is a statistician goes well beyond those with formal degrees in the field, to include a wide array of creators and users of statistical data and tools. Statisticians work within a variety of economic, cultural, legal, and political settings, each of which influences the emphasis and focus of statistical inquiry. They also work within one of several different branches of their discipline, each involving its own techniques and procedures and, possibly, its own ethical approach. Furthermore, they contribute to software developments relying on statistical methods including artificial intelligence and machine learning tools. Whatever their area of expertise, statisticians' ethical principles are an integral part of their professional competence and should be part of a comprehensive statistical education.

Statisticians work in diverse fields such as economics, psychology, sociology, medicine and artificial intelligence, whose practitioners may or may not have ethical conventions that influence their conduct. Even within the same setting and branch of statistics, individuals may face various situations and constraints in which ethical questions arise.

The aim of this declaration is to enable the statistician's individual ethical judgments and decisions to be informed by shared values and experience, rather than by rigid rules imposed by the profession. The declaration seeks to document widely held principles of the statistics profession and to identify the factors that obstruct their implementation. It recognizes that, the operation of one principle may impede the operation of another, that statisticians – in common with other occupational groups – have competing obligations not all of which can be fulfilled simultaneously. Thus, statisticians will sometimes have to make choices between principles. The declaration does not attempt to resolve these choices or to establish priorities among the principles. Instead, it offers a framework within which the conscientious statistician should be able to work comfortably. It is urged that departures from the framework of principles be the result of deliberation rather than of ignorance.

The declaration's first intention is to be informative and descriptive rather than authoritarian or prescriptive. Second, it is designed to be applicable as far as possible to the wide and changing areas of statistical methodology and application. For this reason, its provisions are drawn quite broadly. Third, although the principles are framed so as to have wider application to decisions than to the issues it specifically mentions, the declaration is by no means exhaustive. It is designed in the knowledge that it will require periodic updating and amendment, reflecting on the one hand developments in the generation of information and technical tools utilized by statisticians and, on the other hand, in the uses (and, consequently, misuses) of statistical outputs. The increasing production and availability of digitised data by a myriad of private and public bodies, that can be used for statistical purposes, is such a major phenomenon that it is conducive to reassess the declaration for needed amendments [1] [2]. Fourth, the values, principles, and the commentaries which follow acknowledge with the general written or unwritten rules or norms, such as compliance with the law or the need for probity. However, the declaration restricts itself insofar as possible to matters of specific concern to statistical inquiry.

[1] The digitised data are often large and complex data sets and the data generation process may be unknown. At the same time, computational capacity has increased dramatically enabling the use of computer intensive techniques such as machine learning and artificial intelligence raising new ethical issues, for statisticians, data scientists and society at large.

[2] With the fast expending inclusion of Statistics in emerging sectors of activity, there are situations where it is desirable to develop specific components of the ethical framework to answer the questions raised in collaboration with other fields of expertise that contribute to this emergence, to provide a shared guidance. Artificial intelligence is one such example.

Although not explicitly stated, the Principles inherently reflect the obligations and responsibilities of – as well as the resulting conflicts faced by – statisticians to forces and pressures outside of their own performance, namely to and from:

- Society
- Employers, Clients, and Funders
- Colleagues
- Subjects

In carrying out his/her responsibilities, each statistician must be sensitive to the need his/her actions are consistent with the interests of each group and do not favour any group at the expense of any other, or conflict with any of the Principles.

The Principles are followed by short commentaries on the conflicts and difficulties inherent in their application. A link is provided for each ethical principle for those who wish to pursue the issues. Similarly, a limited annotated bibliography is provided after the commentaries for those who wish to pursue the issues or consult more detailed texts.

SHARED PROFESSIONAL VALUES

Our shared professional values are respect, professionalism, truthfulness, and integrity.

1. Respect

We respect the privacy of others and the promises of confidentiality given to them.

We respect the communities where data is collected and guard against harm coming to them by misuse of the results.

We should not suppress or improperly detract from the work of others.

2. Professionalism

The value Professionalism implies Responsibility, Competence and Expert Knowledge, and Informed Judgment.

We work to understand our users' needs and develop relevant solutions.

We use our statistical knowledge, data, and analyses for the Common Good to serve the society.

We strive to collect and analyse data of the highest quality possible. We assess their quality whether collected through censuses, surveys or from other sources, using available quality frameworks.

We are responsible for the fitness of data and of methods for the purpose at hand.

We follow processes aimed at ensuring the social acceptability of using the data for the statistical purposes we pursue (including linked data sets).

We discuss issues objectively and strive to contribute to the resolution of problems.

We obey the law and work to change laws we believe impede good statistical practice.

We are continuously learning both about our own field as well as those to which we apply our methods.

We develop new methods as appropriate.

We do not take assignments in which we have a clear conflict of interest.

We act responsibly with our employers.

3. Truthfulness and Integrity

The values of Truthfulness and Integrity are reflected in our work processes, that rely on Independence, Objectivity and Transparency.

We produce statistical results using our science and are not influenced by pressure from politicians or funders.

We are transparent about the statistical methodologies used and make these methodologies public, including open-source software wherever practicable to enable reproducibility.

We strive to produce results that reflect the observed phenomena in an impartial manner.

We present data and analyses honestly and openly-together with information about the limits of their relevance by providing appropriate quantitative and qualitative information.

We are accountable for our actions.

We have respect for intellectual property.

As scientists, we pursue promising new ideas and discard those demonstrated to be invalid.

We work towards the logical coherence and empirical adequacy of our data and conclusions.

We value well-established objective criteria of assessment.

ETHICAL PRINCIPLES

1. Pursuing Objectivity

Statisticians should pursue objectivity without fear or favour, only selecting and using methods designed to produce the best possible results, taking account of factors such as accuracy and timeliness. They should ensure the data used in the analysis are fit for purpose. They should ensure they have the required subject knowledge available to them. They should present all findings openly, completely, and in a transparent manner regardless of the outcomes. They should provide information about the limits on the relevance of the findings by providing appropriate quantitative and qualitative information. Statisticians should be particularly sensitive to the need to present findings when they challenge a preferred outcome. The statistician should guard against predictable misinterpretation or misuse. If such misinterpretation or misuse occurs, steps should be taken to inform potential users. Findings should be communicated for the benefit of the widest possible community-yet taking care not to harm any population group.

2. Clarifying Obligations and Roles

The respective obligations of employer, client, or funder and statistician regarding their roles and responsibility that might raise ethical issues should be spelled out and fully understood. In providing advice or guidance, statisticians should take care to stay within their area of competence, and seek advice, as appropriate, from others with the relevant expertise.

3. Assessing Alternatives

Available methods and procedures should be considered, and an impartial assessment provided to the employer, client, or funder of the respective merits and limitations of alternatives, along with the proposed method.

4. Conflicting Interests

Statisticians avoid assignments where they have a financial or personal conflict of interest in the outcome of the work. The likely consequences of collecting and disseminating various types of data and the results of their analysis should be considered and explored.

5. Avoiding Pre-empted Outcomes

Any attempt to establish a predetermined outcome from a proposed statistical inquiry should be rejected, as should contractual conditions contingent upon such a requirement.

6. Guarding Privileged Information

Privileged information is to be kept confidential. This prohibition is not to be extended to statistical methods and procedures utilized to conduct the inquiry or produce published data.

7. Exhibiting Professional Competence

Statisticians shall seek to upgrade their professional knowledge and skills, and shall maintain awareness of technological developments, procedures, and standards which are relevant to their field, and shall encourage others to do the same.

8. Maintaining Confidence in Statistics

In order to promote and preserve the confidence of the public, statisticians should ensure that they accurately and correctly describe their results, including the explanatory power of their data. It is incumbent upon statisticians to alert potential users of the results to the limits of their reliability and applicability by providing appropriate quantitative and qualitative information.

9. Exposing and Reviewing Methods and Findings

Adequate information, including open-source software, should be provided to the public to permit the methods, procedures, techniques, and findings to be assessed independently.

10. Communicating Ethical Principles

In collaborating with colleagues and others in the same or other disciplines, it is necessary and important to ensure that the statisticians' ethical principles are clearly understood by all participants, and properly reflected in the inquiry.

11. Bearing Responsibility for the Integrity of the Discipline

Statisticians are subject to the general moral rules of scientific and scholarly conduct: they should not deceive or knowingly misrepresent or attempt to prevent reporting of misconduct or obstruct the scientific/scholarly research of others.

12. Protecting the Interests of Subjects

Statisticians are obligated to protect subjects, individually and collectively, insofar as possible, against potentially harmful effects of participating. This responsibility is not absolved by consent or by the legal requirement to participate. The intrusive potential of some forms of statistical inquiry, including the use of other data and linked data sets, requires that they be undertaken only with great care, full justification of need, and best possible notification of those involved. Insofar as possible, inquiries should be based on informed consent. In all cases, the identities and records of all subjects or respondents should be kept confidential. Appropriate measures should be utilized to prevent statistics from being released in a form that would allow a subject's or respondent's identity to be disclosed or inferred.

BACKGROUND NOTE

The involvement of the International Statistical Institute in establishing a declaration on professional ethics has extended over decades. The Bureau of the Institute, in response to representations by members and a proposal by the Institute's Committee on Future Directions, initially established a Committee on a Code of Ethics for Statisticians in 1979, during the 42nd ISI Session in Manila. That Committee[3] prepared a 'code' that was accepted by the Institute during its Centenary Celebration in 1985, with the adoption of the following resolution by the General Assembly of the ISI on 21 August 1985:

• recognizing that the aim of the Declaration on Professional Ethics for Statisticians is to document shared professional values and experience as a means of providing guidance rather than regulation.

• adopts the Declaration as an affirmation of the membership's concern with these matters and of its resolve to promote knowledge and interest in professional ethics among statisticians worldwide.

• determines to send the Declaration to all members of the ISI and its Sections and to disseminate it, as appropriate, within the statistical profession.

• commends the Committee responsible for developing the Declaration for its thorough, efficient, and successful work during the last five years.

With the passage of time, the Institute found itself visiting the question of the need for an updating of the Declaration. In July 2006, the Executive Committee specifically invited its standing Professional Ethics Committee[4] to revisit the ISI Declaration and, "should the occasion arise, (propose) updates to the ISI Declaration". This the Committee has now done. A revised document, prepared for a meeting held in Paris, in March 2007, and hosted by INSEE, was followed by an open meeting at the ISI international meetings in Lisbon, in August 2007, at which the results of all these efforts were presented to the participants for their comments and reactions. Although agreement was evident on many points, a number of suggestions for further examination were proposed, which are reflected in the addition of a Section on Shared Professional Values and a reordering and combining of several of the Ethical Principles that derive from these Values. A new version was adopted by the 2010's ISI General Assembly.

Whilst the 2010 Declaration content remains largely valid, the increasing use of a diversity of data sources, linked data sets and computationally heavy statistical methods has required updates introduced in 2023[5].

In accordance with the spirit and letter of the former resolutions, the International Statistical Institute presents this revised and updated Declaration on Professional Ethics, with the continued hope and belief that the new document will assist colleagues throughout the world in the pursuit of their professional goals and responsibilities.

[3] The Committee was chaired by Roger Jowell. Original members were W. Edwards Deming, Arno Donda, Helmut V. Muhsam and Edmund Rapaport, who subsequently were joined by Edmundo Berumen-Torres, Gilbert Motsemme and René Padieu.

[4] The Committee that conducted the 2010 review was composed of David Morganstein (Chair), Margo Anderson, Edmundo Berumen, Stephen E. Fienberg, Fred Ho, Roger Jowell, Denise Lievesley, Olav Ljones, Bill Seltzer, and Jan Robert Suesser. The Committee receives important support from an Ethics Advisory Group consisting of Jean-Louis Bodin, Oliver J.M. Chinganya, Howard Gabriels, Dan Levine, René Padieu, Hrachya Petrosyan, and Norbert Victor.

[5] In the 2023 update, the composition of the Committee was as follows Walter Radermacher (chair), Jairo Arrow, Misha Belkindas, Ayse Bilgin, Albina Chuwa, Hing Wang Fung, Saleha Habibullah, Sibylle von Oppeln-Bronikowski, Eric Rancourt, Jan Robert Suesser, Silke Stapel-Weber, Teresita Evelina Terán, Dennis Trewin (coordinator of the review), Nikos Tzavidis, Gabriella Vukovich