

**U.S. Federal Statistics and Statistical Ethics:
The Role of the American Statistical Association s
Ethical Guidelines for Statistical Practice***

by

William Seltzer
Senior Research Scholar
Department of Sociology and Anthropology
Fordham University
Bronx, NY 10458
(seltzer@fordham.edu)

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Abstract

The paper first discusses the relevance of ethical norms to government statistical work (Section 1) and then reviews some of the harms flowing from ethical lapses, with a special emphasis on those relatively rare instances when governmental data systems threatened or substantially harmed vulnerable population subgroups (Sections 2 and 3). The paper goes on to examine ethical norms as one of a series of safeguards available to protect against threats of serious misuse involving government statistical system (Section 4). The final three sections of the paper address, respectively, the functional roles of ethical codes or guidelines (Section 5), the guidance provided by the ASA's Ethical Guidelines for Statistical Practice for government statisticians (Section 6) and a presentation of specific strategies for coping with and helping to prevent ethical threats to government statistical work (Section 7). While the primary focus of the paper is the U.S. federal statistical system, the issues raised have wider applicability.

Keywords: government statistics, statistical policy, ethics

1. Introduction: Why ethics?

Why do we need to talk about ethics? In particular, why do government statisticians need to talk about and be aware of ethics? After all, there are laws and executive orders to guide us, instructions from supervisors, and the imperatives of science attributable to the field of statistics or to one or another subject-matter areas related to specific fields of application.

Unfortunately, these different sources of guidance are sometimes in conflict with one another. The opportunities for conflict multiply when one tries to take into account other important influences on one's functioning as an official statistician: user requests, the policy concerns of elected officials, and one's personal tastes, preferences, and values. More importantly, intentionally or not, the actions of government statisticians can lead to a variety of types of harms. Ethical norms add another dimension to thinking about our actions as statisticians. In addition, they can provide guidance in the process of weighing and sorting through conflicting demands in ways that avoid or minimize the potential for harm.

Some believe that statisticians and other professionals should obtain any needed moral guidance solely from religious or philosophical teachings and not from a professional or scientific association. However, religion and philosophy, while providing over-arching general guidance, are rarely able to directly address the specific issues and associated threats that may arise in any given scientific field.

Others have argued against ethical codes or standards on the grounds that it is enough for us to be good statisticians scientifically and obey the law. Those advancing this position are on questionable ground. The view that moral issues play no role in science and governmental operations was one of the defenses unsuccessfully offered by those found guilty of war crimes and crimes against humanity at the Nuremberg War Crimes Tribunals for planning and carrying out medical experiments on concentration camp inmates during WWII [Caplan, 1992: 267]. This international judgment is also reflected in U.S. federal policy. For example, a 1961 NIH handbook described the task of those reviewing the use of volunteer human subjects in clinical research, reviewers are guided by both moral and scientific principles [Glantz, 1992: 186]. Subsequent federal legislation has mandated that ethical issues be addressed when research is planned, reviewed, and implemented (see, for example, various revisions of chapter 46 of Title 45 of the Code of Federal Regulations).

The primary set of issues that has motivated much work on research ethics over the past 60 years in the United States and elsewhere has been experiments involving physical or psychological interventions, including the withholding of standard therapies, that may adversely affect the health or well-being of individual research subjects. Commonly cited examples of ethically-flawed research include the medical experiments carried out by the Nazis in World War II [Annas and Grodin, 1992], the U.S. Public Health Service's Tuskegee syphilis study [Jones, 1983], and Milgram's experiments involving the administration of simulated electrical shocks [Reynolds, 1979: 123-133].

Because such examples seem to be so far removed from their own work, government statisticians, at least those working outside public health and biostatistical applications, may be tempted to consider a discussion of ethical issues as beyond their immediate concern. However, as summarized in section 2 below, other types of harm have been associated with government statistical work. Even the War Crimes Tribunal that tried the Doctors Case at Nuremberg moved beyond medical experimentation to include a nonmedical crime involving data collection, admittedly of an extreme form. One element of the Doctors Case, and in the language of the Chief Counsel at Nuremberg, Telford Taylor, perhaps the most utterly repulsive charges in the entire indictment [Annas and Grodin, 1992: 84], pertained to the identification of a sample of Jewish-Bolshevik prisoners (later extended to some concentration camp inmates), the collection of a range of physical, social, and demographic data from these sample cases, and the preservation of these data, along with the skulls of these persons after their death was induced, to complete an anthropological collection at the University of Strasbourg [1992: 84-85; 100; Lifton, 1986: 284-287]. In the Tribunal's judgment, this crime was explicitly included as one of the elements that established the guilt of those involved in war crimes and crimes against humanity [Annas and Grodin, 1992: 100].

The balance of the paper addresses the various kinds of harm that have sometimes been associated with government statistical work (section 2) and the factors that seem to have been associated with some of the gravest harms (section 3). The paper then takes up the topic of ethics as one of several safeguards against serious harm (section 4) and the varied functional roles that ethical norms have served in different professions (section 5). In section 6, the paper describes the American Statistical Association's (ASA) Ethical Guidelines for Statistical Practice [ASA, 1999] in general terms and discusses those portions of the guidelines of special relevance for government statistical work. The paper concludes (section 7) with some suggestions for coping with ethical threats arising in government statistical work, particularly threats affecting the federal statistical system. These suggestions are presented under two broad headings: coping strategies and prevention strategies.

Although the focus of the paper is the U.S. federal statistical system, most of the issues raised have wider applicability. Those working with government statistics in other countries will certainly have to take into account variations in national laws and policies related to official statistics and the legal obligations and responsibilities associated with their conditions of employment. Nevertheless, with regards to official statistics, the ASA's ethics guidelines, the International Statistical Institute's Declaration on Professional Ethics [International Statistical Institute, 1986] and the United Nations Statistical Commission's Fundamental Principles of Official Statistics [United Nations Economic and Social Council, 1994] all reflect a common set of ethical norms.

2. Harm

In thinking about the harm sometimes associated with the work of government statisticians, I have found it useful to distinguish between what might be termed traditional harm and extraordinary harm. The reason the distinction is made, and the reason so much attention is given in the paper

to the latter, is that this type of harm has only been recently identified as a source of concern in government statistics. Moreover, while this most serious harm is comparatively rare, it must be fully taken into account in government statistical policy, given its substantial impact both in human terms and on the image of the government statistical service. As has been argued elsewhere, policy discussions about nuclear safety and technical work on nuclear power, do not ignore the events at Three Mile Island or Chernobyl, even though they are recognized as rare [Seltzer, 1998: 537].

A. Traditional Harm. By traditional harm I refer to those professional sins that have traditionally concerned us as statisticians: cooking data, sloppy or deliberately distorted analysis, the use of methods or concepts designed to obtain a predetermined result, as well as the violation of more general ethical norms such as using the ideas or language of colleagues without proper acknowledgment or helping or hindering the careers of people one supervises for reasons unrelated to their job performance. Needless to say by referring to this class of harms as traditional, I neither condone them or minimize their importance. Indeed, these more traditional forms of harm are far more common and are found at various times in countries at all levels of development than the extraordinary harms discussed in the next section.

One set of traditional harms that are of particular concern to government statisticians are those associated with attacks on the statistical system, its outputs (including, data, concepts, and classifications), staff, and the leadership of the system. These attacks are often related to improper political influence.

B. Extraordinary Harm. In contrast to traditional harm, I use the term extraordinary harm to mean the use of the statistical system and closely related information systems to attack the population itself, usually members of vulnerable population subgroups. These extraordinary harms have in the past included identifying and targeting individuals for forced migration, crimes against humanity, and genocide.

Recent research findings on the misuse of population data systems to assist in the perpetration of major human rights abuses [Seltzer, 1998; Søbye, 1998; Seltzer and Anderson, 2000] and summarized in Seltzer and Anderson [2001] make it clear that otherwise benign statistical operations can be the source of extraordinary harm and that otherwise well-qualified statisticians and data specialists can actively advance this harm. An indication of the nature of the problem may be seen from Table 1 below, reproduced from Seltzer and Anderson [2001]. Three different types of data are distinguished in Table 1: *macro* data, *meso* data, and *micro* data. *Macro* data refer to tabulated aggregates for national or large geographic areas, *meso* data to tabulated data for sufficiently small geographic areas that the results can be used operationally to identify and target a vulnerable population subgroup, and *micro* data identifiable records for each individual.

Over the years several different frameworks for examining harm associated with government statistical or data programs have been used. One approach, taken by Duncan et al. [1993], was to distinguish between disclosure of information about identifiable individuals and any harm that might result from such disclosures. Seltzer [1994] used an eleven category framework for

examining specific threats to the integrity of government statistical programs.¹ However, using these analytic approaches, both Duncan et al. [1993] and Seltzer [1994] underplayed or ignored the complicity of statistical systems and personnel in gross human rights abuses.

I believe, however, that the determination of whether or not a specific activity gives rise to harm may itself be an ethical trap that can catch those who are unprepared. For example, another of

Table 1. List of Cases Where Misuses of Population Data Systems Have Been Associated with Human Rights Abuses or Where Such Misuses Have Been Seriously Contemplated

[The time periods and intended victims specified refer only to those times and victims studied in the sources cited.]

<i>Place</i>	<i>Time period</i>	<i>Intended victims</i>	<i>Data systems involved</i>	<i>Type of data</i>	<i>Human rights abuse</i>	<i>Source</i>
Germany	1933 - 1945	Jews, Gypsies, and others	Numerous	Macro, micro	Genocide	Seltzer, 1998
Poland	1939 - 1943	Jews	Primarily special censuses	Macro, micro	Genocide, crimes against humanity	Seltzer, 1998
France	1940 - 1944	Jews	Population registration, special censuses	Macro, micro	Genocide, crimes against humanity	Rémond, 1996; Seltzer, 1998
Netherlands	1940 - 1944	Jews and Gypsies	Population registration system	Macro, meso, micro	Genocide, crimes against humanity	Seltzer, 1998
Norway	1942 - 1944	Jews	Special census and proposed population registration	Macro, micro	Genocide, crimes against humanity	Seltzer, 1998; Søybye, 1998
Romania	1941-1943	Jews and Gypsies	1941 Population Census	Macro, micro	Genocide, crimes against humanity	Black, 2001
United States	19 th century	Native Americans	Special censuses, population registers	Macro, micro	Forced migration, other serious crimes	Seltzer, 1999
United States	1941 - 1945	Japanese Americans	1940 Census	Macro, meso	Forced migration, internment, and loss of property	Seltzer and Anderson, 2000
USSR	1919 - 1939	Minority populations	Various population censuses	Macro, micro	Forced migration, other serious crimes	Blum, 2000
Rwanda	1994	Tutsi	Population registration	Micro	Genocide, crimes against humanity	des Forges, 1999

Source: Seltzer and Anderson, 2001.

the defenses offered by the doctors who carried out medical experiments on concentration camp inmates during WWII was that the research subjects "were doomed to die anyway" [Caplan, 1992: 266]. Indeed, no harm is often interpreted as "no added harm" or "no added risk of harm." Along the same lines, it has been said that the Dutch Jews would have been rounded up for deportation and the Japanese Americans would have been interned, regardless of the actions of those involved with the data systems that assisted in these endeavors. Implicit in these statements is the view that the statisticians and the others involved in these data systems didn't really cause harm and so did nothing really wrong.² Using almost the same language, Jones [1981: 207] observed that a number of health officials associated with the Tuskegee syphilis study seemed to justify the continuation of that study, even after penicillin became available, on the grounds that the research subjects were now beyond medical help, thus strongly implying that no real harm had been done...

3. Factors Contributing to Extraordinary Harm

No rigorous study has yet attempted to identify the causes of extraordinary harm attributable to governmental statistical systems and related data operations or the technical or managerial staff involved. However, on the basis of the limited research into the misuse or attempted misuse of population data systems associated with major human rights abuses it is possible to hypothesize a number of factors that contribute to such ethical lapses or at least are possible indicators of such lapses. This process of hypothesizing is assisted by research in the more widely studied area of biomedical ethics.

The contributing factors (or indicators) so far identified relate to the motivations of the perpetrators and their explicit or implicit ethical perspectives, the circumstances of the victims, and the process by which harm takes place. With regard to motivation, from the 20th century cases studied so far, which are not necessarily representative of all cases, ideology, patriotism, and fear seem less decisive factors in complicity in the misuse of population data systems than bureaucratic opportunism and professional zeal [Seltzer, 1998; Seltzer and Anderson, 2001].³ This finding is similar to the observation that the willingness of non-Nazi German medical scientists to teach anti-Semitic racial hygiene could be attributed to the fact that they welcomed the opportunity of translating their theoretical research into government policy [David, Fleischhacker, and Höhn, 1988: 89] and Friedlander's observations about the motivations of the managers and supervisors of the Nazi euthanasia program [1995: 196] that

Career considerations undoubtedly were the most important reason [they] agreed to direct the killings. . . . These young men had reached positions commonly considered important and influential. In addition, these jobs involved an assignment that was secret, sensitive, and significant. They operated at the center of events.

In characterizing the motivations of individual U.S. Public Health Service doctors associated with the Tuskegee syphilis study Jones refers to their scientific interest and reformer's zeal [1981: 131] and that [171]

They were crusaders, true believers. Safeguarding the public's health was their mission, and as zealots they had a tendency to overstate the challenges they confronted.

Given their single-minded zeal, it is not surprising that such individuals generally seemed to give little attention to ethical norms in their working world [Jones, 1981: 144, 190] or that the ethical norms they did rely on were largely based on utilitarian principles, particularly those stressing the greatest good for the greatest number or those in which presumed social beneficence usually trumped individual harm [Caplan, 1992: 267-268; Jones, 1981: 194-196].

One common thread that runs through the gravest abuses in statistics, and many of the examples of such abuse in the biomedical field, is that victims are members of socially or politically vulnerable groups. Of course, in the field of population statistics, the victims (Jews, Gypsies, Japanese Americans, Tutsis) were explicitly chosen because they were members of a vulnerable population group. Finally, again and again, we see very grave harms emerge from minor wrongs or individual special cases. For example, the forced euthanasia programs in Nazi Germany began with a case based ostensibly on a plea from the father of a very retarded infant to end the child's life [Lifton, 1986: 50], but these programs were quickly expanded and extended in scope. Similarly, the cooperation of the U.S. Census Bureau with the military authorities on the West Coast in 1941 and 1942 began by supplying information to the military intelligence agencies requested for individual investigations in a few census tracts and quickly escalated to providing far more detailed and extensive information and services that assisted in the internment of all Japanese Americans on the West Coast [Seltzer and Anderson, 2000: 6-7]. In other contexts, this phenomenon has been termed mission creep.

The objective of this incomplete review of factors associated with extraordinary harm is twofold. First, to suggest some possible warning indicators based on how things have gone disastrously wrong in the past and second, to better inform our understanding of ethical issues in government statistical work.

4. The Context of Ethical Norms

A range of safeguards must be fostered to defend against both traditional and extraordinary harms that have at one time or another arisen in both industrialized and developing countries. While individual safeguards are rarely absolute, they can help to discourage a contemplated misuse by raising the cost of such a misuse, either in financial, personal, or political terms. If even one of the safeguards successfully discourages misuse, the extent and duration of harms flowing from the misuse may be reduced or eliminated and, in the extreme, lives may be saved.

With respect to the extraordinary harm that has sometimes been associated with government statistical systems Seltzer and Anderson [2001] listed five such safeguards:⁴

(a) Substantive safeguards

The ultimate safeguard is to not gather or not save data that permit associating an individual with a potentially vulnerable group. This safeguard, while often perceived as reducing the analytical or

policy usefulness of the involved data system, have been deliberately employed in several countries that had histories of misuses associated with major abuses. Whether this reduction in usefulness is as substantial as is sometimes asserted, the case should be examined on a case-by-case basis and not just dogmatically accepted.

(b) Methodological and technological safeguards

Even if items and classifications that define one or more target populations are included in a national data system, a range of methodological and technological procedures can be used to reduce the potential negative impact of such inclusions. For example, if a data system is based on a sample, rather than full-count data-gathering, the resulting information is of little help in providing *micro* data that can be used to provide operational lists of the member of a target population. Depending on the size and type of sample, the results may also be of limited usefulness in providing operationally relevant *meso* data. Typically, even relatively large scale national sample surveys based on multi-stage samples of clustered households would be of limited usefulness in this regard. On the other hand, essentially unclustered systematic samples of census enumeration records or population registers might well provide operationally useful *meso* data if results were made available for small geographic areas.

Another broad technological approach is the deliberate introduction of errors of one sort or another into the data set. These include systematically swapping responses for individual items between records or introducing perturbations in specific items. In addition, quantitative items may be top (or bottom) coded so that unduly large (or small) responses are grouped together to protect the identity of respondents, while categorical data may be coded in broad response categories or only large areal units may be identified for similar purposes.

(c) Organizational and operational safeguards

Suitable organizational and operational arrangements have also been used to help protect against the misuse of population data systems, although to date these arrangements have not been systematically described. For example, decisions in several U.S. federal statistical agencies related to the release of data that may pose confidentiality issues are made by a committee that is independent of both the concerned substantive and processing divisions. In the Netherlands, the population registration system is deliberately kept as decentralized as possible, and in several countries machine readable census data files are stripped of most or all individual personal or exact address identifiers. More complex procedures have been used in some sample surveys collecting sensitive data. In one case three files were established: an anonymous data file, an identifier file, and a bridge file that provided the link between the other two files, with the bridge file kept in a foreign country immune from domestic court orders. As with other safeguards, the degree of protection afforded by such operational and organizational arrangements is rarely absolute, particularly with respect to threats posed by misuse of *meso* data. Nevertheless, the use of such safeguards, jointly with other approaches, can make misuse more difficult and thus deserves more careful attention.

(d) Legal safeguards

A standard feature of any modern national statistical system is legal provisions designed to protect the confidentiality of many kinds of information reported to statistical agencies. The content, status, and effectiveness of these provisions vary greatly by agency across the U.S. federal statistical system. For example, the Census Bureau, the National Center for Health Statistics, and the National Center for Education Statistics, each have comparatively strong statutory protection for the confidentiality of information they collect.

Nevertheless, it is important to be aware that such strong legal safeguards can apparently be waived by future legislative acts. For example, a recent memorandum from the Office of Legal Counsel of the U.S. Department of Justice, while upholding the confidentiality provisions of the law with respect to the Census Bureau (U.S. Code Title 13), provided explicit guidance on how to draft new statutes that would repeal federal statutes prohibiting or restricting disclosure and to establish an interpretative background for future federal statutes that would favor disclosure [Moss, 1999: 5]. Although this memorandum was written specifically with respect to Title 13, the language used by the Office of Legal Counsel was so general, that it would seem to cover any federal statutory protections of confidentiality. Moreover, in times of war or national crisis, legal protections are often weakened. For example, in the United States, the War Powers acts enacted early in both WW I and WW II, specifically waived the confidentiality provisions of Title 13.

(e) Ethical safeguards

Simply put, ethical safeguards are those based on moral norms. Such safeguards direct us to look beyond justifications based solely on the scientific value, legality, or importance of the applications involved.

At least two former directors of the US Census Bureau, Barbara Bryant [1995: 32-33] and Ken Prewitt [2000], commented on what Prewitt [2000] has termed the proactive assistance provided by senior Bureau staff in the internment of Japanese Americans after the US entry into World War II. Both noted that what may be permissible under the letter of the law, may violate the spirit of the law. For me, one role of ethical norms is to help to fill that gap between the spirit and the letter of the law.

Until recently, ethical guidelines in statistics, those of the ASA and others, had focused almost exclusively on traditional harms. Moreover, while the ASA guidelines always acknowledged the Association's three broad spheres of activity: academia, government and industry, former versions of the ASA guidelines did not give particular attention to the concerns of government statisticians. This is probably because the original impetus for work on ethical guidelines in statistics in the United States came from the set of ethical principles drawn up by W. Edward Deming to guide his private practice in statistical consulting [Gardenier, 1996]. The newly revised ASA guidelines largely remedy this imbalance. In addition, since they were completed after the results of some of the recent research in extraordinary harm became available, they were able to include language that explicitly take such harm into account. The UN Fundamental Principles, which is addressed solely at official statistics, referring to the confidential nature of data on individuals obtained for statistical purposes, uses language that is incompatible with extraordinary harm.

5. Functional Roles of Ethical Codes or Guidelines

What sorts of functional roles do ethical norms serve? Ethical guidelines or standards developed for individual professions have been observed to serve three different kinds of functions. Here I will build on some of the distinctions developed by Kultgen [1988: chapter 10].

First, a statement of ethical principles may provide an ethical cover for those engaged in the profession. Externally, that means that they are designed to assure users of the concerned professional services and the general public that practitioners are ethical, that is, follow good practices. Internally, this helps practitioners develop a strong sense of self-worth. Ultimately, ethical statements then become an essential feature in transforming an occupation into a profession. While they may be of some value, such norms rarely go beyond general platitudes and usually avoid matters of controversy. Thus, ethical norms primarily conceived in this light normally fail to address the real ethical challenges facing the profession.

Second, an ethical statement can provide a set of agreed-on rules for good professional behavior. In other words, if practitioners just follow the rules in the ethical standards adopted in a given profession they can be assured that their actions are ethical. There are several dangers associated with reducing ethics to a simple set of rules. Such reductionism can lead to behavior aimed at adherence to the letter of the rule rather than the ethical principle or principles that underlie it. This in turn may lead to distortions of behavior so as to be able to approach ever so closely the borderline between what is seen as ethical and unethical and thereby get the job done while avoiding the violation of an ethical canon. The notion of ethics as a set of rules also ignores the fact that in many situations we must deal with several ethical principles, which may point in quite different directions.

Finally, an ethics standard or guideline can be seen as an instrument for introducing a moral dimension in assessing the rightness or wrongness of our actions as statisticians. Viewed in this light, a statement of professional ethics is not a simple rule book but rather a device for promoting awareness of relevant ethical issues. From this perspective, guidelines in statistics have been seen as playing an important role in the education and training of statisticians [Jowell, 1981; Gardenier, 1996]. Indeed, Roger Jowell, chair of the committee that developed the ISI declaration [International Statistical Institute, 1986], argued that the educational role of a statement on ethics should be viewed as its paramount function, and that one of the reasons for adopting or revising a statement or code of ethical principles is the opportunity it provides for education and discussion [Jowell, 1981].

Still working within this overall perspective, John Gardenier, chair of the American Statistical Association committee that developed the most recent ASA guidelines [American Statistical Association, 1999], views the main use of these guidelines as a reference document for anyone working with, publishing, or consuming purportedly professional statistical work [2001]. Gardenier has also pointed out the value of the guidelines in interviewing prospective candidates

Someone who can discuss the guidelines intelligently and supports them is likely to be a competent and responsible statistical professional. Someone who cannot discuss the guidelines intelligently or who casually dismisses them as irrelevant is

less likely to be a competent and responsible statistical professional. This is not an infallible "litmus test;" it should be only a part of a well-reasoned evaluation by those engaging statistical services.

In practice, most statements of professional ethics fit into more than one of these functional categories. All statements are designed to provide a degree of ethical cover. Certainly, most professions and those engaged in them, recognize some basic practices of scholarship almost at the level of very simple rules. For example, most ethical norms contain clear injunctions against plagiarism and about the requirement to always cite sources. However, even these simple rules may quickly become complicated when we consider issues of writing for non-technical audiences or in speaking to the media, where traditional scholarly footnotes are unwelcome.

Another way of looking at the issue of the functional role of ethical guidelines or standards is whether or not any disciplinary measures are linked to violations of the stated norms [AAAS/USORI, 2000; DuMez, 2000; Gorlin, 2000]. A related question is how, if at all, are allegations of ethical misconduct to be investigated. In general, ethical statements that are connected with professions that have formal state licencing (for, example, lawyers and medical practitioners) are those that have the most well developed mechanisms for investigating specific alleged ethical violations and provide for the widest range of sanctions for those found to have violated the standards. By contrast, most scientific and professional organizations in the social sciences either bar the investigation of specific allegations of ethical misconduct or have minimal investigative procedures. Similarly, among social science professional societies sanctions are usually either non-existent or at most involve cancellation of the offender's membership.

Adjudicating individual cases requires the availability of both experienced personnel as needed and substantial financial resources for insurance and lawyers to deal with possible litigation by those unhappy with the outcome of the adjudication process. The ethics committees of most professional and scientific societies in the social sciences, the bodies logically responsible for investigating and adjudicating complaints of ethical misconduct, consist of volunteers who are otherwise occupied with full-time jobs, and the societies themselves have limited financial resources to deal with the risk of ethics-related litigation. (On the other hand, when state licencing is involved, licence fees or other public funds are usually available to cover the costs of the required investigations and their legal defense.) Consistent with this social science approach, the purpose of the ASA ethical guidelines is to encourage ethical and effective statistical work in morally conducive working environments and to assist students in learning to perform statistical work responsibly [ASA, 1999: 1]. Similarly, the ASA Committee on Professional Ethics does not have the authority to act on, rule on, or arbitrate ethical matters [ASA, 2001a].⁵

6. The ASA Guidelines and Government Statistics

The most recent version of the ASA Ethical Guidelines for Statistical Practice was adopted by the ASA Board of Directors in August 1999. As previously indicated, it draws on earlier versions of the ASA guidelines, the International Statistical Institute's 1985 Declaration on Professional Ethics [ISI, 1985], and the Royal Statistical Society's Code of Ethics [1993] and it reflects some recent research findings on extraordinary harm, referred to earlier.

The ASA Guidelines were written for a very broad audience, including persons working in academia, industry, and government. Several of its provisions have limited relevance for government statisticians and those who use government statistics or employ or collaborate with government statisticians. On the other hand, the text does address a number of specific issues that are particularly relevant to government statistical work. Still other provisions are relevant generally to all statistical work, regardless of the field of application.

Some of the provisions of particular relevance for the activities of government statistics and related ethical concerns include two paragraphs in the preamble dealing with statistics and society. The first emphasizes the value of statistics:

Effective functioning of the economy depends on the availability of reliable, timely, and properly interpreted economic data. . . Agricultural productivity benefits greatly from statistically sound applications to research and output reporting. Governmental policy decisions regarding public health, criminal justice, social equity, education, the environment, the siting of critical facilities, and other matters depend in part on sound statistics. [ASA, 1999:3]

The second reflects the issue of harm, including extraordinary harm :

Statistical tools and methods, like many other technologies, can be employed either for social good or for evil. The professionalism encouraged by these guidelines is predicated on their use in socially responsible pursuits by morally responsible societies, governments, and employers. Where the end purpose of a statistical application is itself morally reprehensible, statistical professionalism ceases to have ethical worth. [1999: 4]

Of course, this paragraph is relevant to most fields of statistical application.

The section of the preamble dealing with shared values also has two provisions of special relevance to government statistical programs

5. Adherence to all applicable laws and regulations, as well as applicable international covenants, while also seeking to change any of those that are ethically inappropriate.

6. Preservation of data archives in a manner consistent with responsible protection of the safety and confidentiality of any human beings and organizations involved. [1999:4]

In the context of extraordinary harm, point 5 reminds us of responsibilities flowing from international covenants against genocide and crimes against humanity, while point 6 reminds us of our continuing responsibilities to the responding public.

Within the main body of the ASA guidelines, Section D, Responsibilities to Research Subjects (including census or survey respondents and persons and organizations supplying data from

administrative records, as well as subjects of physically or psychologically invasive research) is perhaps of most concern to government statisticians, at least with respect to extraordinary harm, continued public cooperation, and the reputation of the statistical agency.

Among the eight provisions of this section of the guidelines, three seem to be particularly relevant for regular government statistical programs

1. Know about and adhere to appropriate rules for the protection of human subjects, including particularly vulnerable or other special populations who may be subject to special risks or who may not be fully able to protect their own interests. Assure adequate planning to support the practical value of the research, the validity of expected results, the ability to provide the protection promised, and consideration of all other ethical issues involved. Some pertinent guidance is provided . . . at the end of this document for U.S. law, the U.N. Statistical Commission, and the International Statistical Institute. Laws of other countries and their subdivisions and ethical principles of other professional organizations may provide other guidance.

4. Protect the privacy and confidentiality of research subjects and data concerning them, whether obtained directly from the subjects, from other persons, or from administrative records. Anticipate secondary and indirect uses of the data when obtaining approvals from research subjects; obtain approvals appropriate for peer review and for independent replication of analyses.

5. Be aware of legal limitations on privacy and confidentiality assurances. Do not, for example, imply protection of privacy and confidentiality from legal processes of discovery unless explicitly authorized to do so. [1999: 7-8]

By presenting these excerpts from the ASA guidelines here I hope to encourage all those associated with government statistical programs to read the full guidelines. Many of the general provisions, applicable to all fields have not been reproduced here. In addition, the selection of paragraphs presented here was skewed toward those seen as especially relevant to large-scale population based statistical activities. Given the diversity of government statistical activities, many provisions of critical relevance to other kinds of governmental activities have been omitted. The solution to all these omissions is to read the full document. It is not long and is available at <<http://www.amstat.org/profession/ethicalstatisticians.html>>.

7. Coping with Ethical Threats in Government Statistical Work

(a) Coping strategies

A number of options are available in dealing with what one perceives as an ethical problem in government statistical work. The basic elements of an appropriate response are: generally speaking up about the perceived problem, establishing a written record, and explicitly informing one's supervisor about these concerns. In deciding on what to do at any stage it is important that any response be proportional to the threat or harm associated with the ethical problem.

To the extent one can do so without violating confidentiality or security constraints under which one works, concerns should be shared verbally with colleagues, supervisors, and mentors in the unit or agency. If, after talking with others about the perceived issue, these concerns remain, they should be put in writing so that a record of the problem or potential problem is established. In addition, these concerns should be brought to the attention of one's supervisor, explicitly and in writing. In writing up these concerns, it may be useful to indicate how the proposed action or existing practice violates existing norms by citing, for example, relevant provisions of the ASA guidelines or the Committee on National Statistics *Principles and Practices for Federal Statistical Agency* [National Research Council, 2001].

If one is a supervisor, understand that the ASA guidelines state

within organizations . . . statistical practitioners with greater prestige, power, or status have a responsibility to protect the professional freedom and responsibility of more subordinate statistical practitioners to comply with these guidelines.
[ASA, 1999: 10]

All these responses are perfectly consistent with behavior as a responsible, loyal, and law abiding civil servant. Moreover, such a strategy can be successful.

I will cite one example. In early 1942 Forrest E. Linder was a young statistician working in the Vital Statistics division of the U.S. Census Bureau. (He went on to have a distinguished career in the federal statistical system, including his role as the founder-director of the National Center for Health Statistics and founder of the Pop Labs project at the University of North Carolina at Chapel Hill.) As a direct follow-up to the Census Bureau's co-operation in the internment of Japanese Americans then living on the West Coast, Linder was sent on a short mission to San Francisco to assist the U.S. Army's Western Defense Command in drawing up plans for a national population registration system for military and statistical purposes [Seltzer and Anderson, 2000: 28-32]. At the end of his mission Linder submitted a 35 page report that discussed the uses of such a system, described some of the technical and administrative difficulties involved, and provided detailed technical guidance about the creation of such a system. Yet, even in the post-Pearl Harbor hysteria of the times, he also included the following warning in the introduction to his report

Emphasis has already been given to the technical and administrative difficulties of general population registration for identity purposes. Mention should be made, also, of the political and psychological dangers. Traditional American thinking regarding freedom of action and thought might consider a mandatory identification register as an infringement of that liberty and the beginning of an American gestapo. The political implications or effects of a compulsory identity registration might be considerable, unless a substantial part of the public clearly saw the necessity for it. Also the possibilities of blacklist inherent in an identification system are certain to arouse the opposition of labor groups. [Linder, 1942: 5]

Ultimately, after a long bureaucratic battle the proposal was rejected in 1943 despite the very

strong support of a number of military and civilian departments and some elements of the statistical community. While a number of technical and administrative reasons were given for its rejection, the privacy and human rights issues raised by Linder were taken up, one way or another, by the other major participants at each stage of the debate, including Linder's supervisor at the Census Bureau, Halbert Dunn, and the Bureau of Budget report that marked its formal end [Seltzer and Anderson, 2000: 32-33].

Beyond these basic responses, more serious options for action are possible. The next step beyond those just outlined is to go public with one's concerns. The act of going public with an ethical concern may raise legal and personal concerns. It also may involve an ethical choice of obligations to one's own agency versus other obligations. The ethical issues involved are addressed in the ASA guidelines in the following terms

In cases of conflict, statistical practitioners and those employing them are encouraged to resolve issues of ethical practice privately. If private resolution is not possible, recognize that statistical practitioners have an ethical obligation to expose incompetent or corrupt practice before it can cause avoidable harm to research subjects or society at large. [ASA, 1999: 10]

Here again it is important to remember the principle of proportionality of response to threat or harm. Minor harms do not usually justify major action. Moreover, it is important that we not escalate differences over scientific methods to a controversy over ethics. Too often one hears charges along the lines of the use of technique x is totally unethical. For example, technical debates about methods of modeling, price adjustment, or the appropriateness of a Bayesian or traditionalist approach sometimes include charges that unethical behavior is involved. While ethical issues may sometimes be involved, the issue is often largely technical. As the ASA guidelines observe

recognize that differences of opinion and honest error do not constitute misconduct; they warrant discussion but not accusation. Questionable scientific practices may or may not constitute misconduct, depending on their nature and the definition of misconduct used. [ASA, 1999: 9]

The lesson here is the simple one that one has to be alert to ethical problems but should not cry wolf every time one disagrees with what is happening.

Going public may take several forms: verbal or written statements, resignation, or non-violent civil disobedience. All of these avenues have been used by those working in the U.S. federal statistical system in the past. Certainly with regard to verbal or written expressions of concern, a wide range of options are available, many of which present no legal difficulties. Again, consistent with the confidentiality or security constraints under which one works, it may be possible to share concerns informally with colleagues and mentors in other parts of the government and in the user community as well as with former teachers or individual members of the ASA known to be experienced with ethical issues. The goal of such sharing is twofold: first, to test the weight of one's concerns by the views of others and second, to develop a plan to deal with the concern if, after consulting with others, the concern remains. More formal avenues may also be available

through an agency ombudsman, where one exists, or through the mechanism of Congressional oversight.

Where these options were unavailable or did not seem to work, perceived threats have also been brought to the attention of the press, expressed in statements or letters or referred to in papers presented at conferences. While these approaches are frequently used to go public about a wide range of policy concerns throughout government, many of which have no relationship to either ethics or statistics, they can in some circumstances place a civil servant at risk. For example, problems may arise when an agency requires clearance of all written communications by staff, the agency then refuses to provide such clearance, and the staff member wants to proceed anyway. Accordingly, in exploring these options, it may be wise to seek advice from experienced colleagues or even legal advice.

There can, however, come a time that a government statistician or statistical administrator is forced to choose between, on the one hand, holding to the basic values of the profession as set out in the ASA Guidelines, the Fundamental Principles of Official Statistics [United Nations Economic and Social Council, 1994], and other relevant ethical statements (for example, International Statistical Institute [1986]) or, on the other hand, obeying contrary executive, legislative, or judicial instruction. The issue is long-standing, and is analogous to that raised by Sophocles in *Antigone* or the teachings of Jesus about conflicts between duty to the central authority of the state and other duties.⁶

Certainly, in a democracy, a government statistician, like any other civil servant or even any citizen, should not lightly set aside or ignore the democratic decision-making process on the grounds that it produces a technically weak or incorrect result. However, even in democracies, the clash of fundamental values with legally constituted authority occurs. In the United States, such clashes from time to time have led senior staff in the federal statistical system to resign in protest rather than participate in what they considered to be misconduct. For example, in the middle of the Depression in 1930, Charles S. Pearson, the statistician in charge of compiling unemployment data in the 1930 Population Census, resigned in protest when instructed to exclude laid-off workers from the figure on total unemployed [Duncan and Shelton, 1974: 24]. In 1987, Barbara Bailar, then an Associate Director of the Census Bureau and Kirk Wolter, then Chief of the Bureau's Statistical Research Division, resigned after the Commerce Department refused to allow the Bureau to proceed with its plans for dealing with underenumeration in the 1990 Population Census. (In the words of Bailar, I was prevented from responsibly performing my duties by a 1987 order from the Commerce Department.) [Anderson, 1988: 165; Choldin, 1994: 152]

It may be noted that these resignations were over issues that fall under the general rubric of traditional harms. It may also be noted that Pearson's resignation appears to have had a direct impact on statistical policy while the 1987 resignations, at least in the short run, did not.

Although non-violent civil disobedience has been less widely used, I am aware of at least two cases where the approach, or something akin to it, was used or threatened. In the 1920s Ethelbert Stewart, then Commissioner of Labor Statistics, refused, despite the threat of a subpoena, to provide a Congressional Committee with company-specific data that had been obtained under a

pledge of confidentiality [Duncan and Shelton, 1978: 168] and in 1980 Vincent Barabba, then the Census Bureau Director, refused to comply with a court order to provide address registers because they contained confidential materials [Mitroff et al., 1983: 15]. In both instances, these officials prevailed.

Whether they would have done so in other circumstances or if they had been more junior in the governmental hierarchy is not clear. They do provide an example, both in terms of those with greater prestige, power, or status taking a responsibility to protect the professional freedom and responsibility of more subordinate statistical practitioners to comply with these guidelines and their willingness to act before research subjects or society at large were subjected to avoidable harm [ASA, 1999: 10].

(b) Prevention strategies

Even as one tries to address specific current ethical threats or potential threats, it is important to work systematically on prevention strategies. A robust prevention strategy is perhaps the best means of reducing the likelihood of serious ethical problems and of ensuring that any ethical threats that do arise are dealt with in a calm and expeditious manner.

As a first step in developing appropriate prevention strategies, I urge an approach that encompasses the following elements:

- (1) Study and documentation of previous problems.
- (2) Develop and disseminate case studies that illustrate ways of addressing ethical issues based on real or hypothetical examples.
- (3) Develop models of research risk that better correspond to the real risks associated with noninvasive social research.⁷
- (4) Include education and training on ethics in university and agency training programs.⁸
- (5) Develop agency-specific plans for fostering discussions of agency ethical issues and agency-specific mechanisms for responding to ethical concerns.
- (6) Develop statements on ethics by agency or by ASA section that might supplement the ASA guidelines.
- (7) Further develop and apply the other types of safeguards summarized earlier. These included substantive, methodological and technological, organizational and operational, and legal safeguards.

Work in some of these areas is already going forward. For example, the ASA Committee on Professional Ethics has already put a small number of case studies and dialogues on ethical issues on its website. More are to be added over time. Unfortunately, issues of particular relevance to many government statisticians are not yet well represented.

More positively, several of the larger federal statistical agencies have given more attention to methodological, technological, organizational, and operational safeguards in recent years. These activities have not only benefitted these agencies themselves but have contributed to two documents designed to provide practical help to all agencies in minimizing disclosure risks: (1) a Checklist on Disclosure Potential of Proposed Data Releases [FCSM, 1999] and (2) *Record Linkage and Privacy: Issues in Creating New Federal Research and Statistical Information* [USGAO, 2001] as well as an earlier study, *Private Lives and Public Policies: Confidentiality and Access of Government Statistics* [Duncan et al, 1993], carried out under the auspices of the Committee on National Statistics. The Committee on National Statistics has also recommended that federal statistical agencies address ethical issues directly. For example, the most recent edition of its *Principles and Practices for Federal Statistical Agency* states that an agency should . . . seek opportunities to reinforce the commitment of its staff to ethical standards of practice [National Research Council, 2001:11], providing clear encouragement for ethics training and related work in line with points 4 and 5 above.

As important as these efforts are, much more remains to be done. Indeed such work is never completed since each new generation of statisticians will face new issues in new contexts. The primary goal of further work on ethics is not more rules. Rather it aims at fostering more discussions of ethical issues so that we are all more conscious that there can be an ethical dimension to what one does as a government statistician. At the same time, work on further strengthening other types of safeguards against both traditional and extraordinary harm needs to be continued.

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Endnotes

1. The specific threats or modes identified were: (1) mission of the statistical service, (2) financial resources and controls, (3) staff, (4) statistical fields or series targeted for expansion or suppression, (5) definitions, concepts, and methodology, (6) terms and nomenclature, (7) altering specific numbers, (8) the extent and timing of the release of data, (9) threats to data confidentiality, (10) use of an agency for political analysis or other political work, and (11) active campaign to discredit the statistical service outputs, methods, or staff. This framework and its individual components are described in Seltzer [1994: 2-13].

2. Underlying this discussion of ethical rights and wrongs in statistics are two quite different approaches to thinking about ethical issues generally. The first approach, formally termed deontology [Slote, 1995:721],

treats moral obligations [largely] independent of the effects of our actions For deontologists, the end does not always justify the means, and certain kinds of actions . . . are wrong for reasons having little to do with good or desirable consequences.

By contrast, consequentialism, or more specifically utilitarianism, treats [1995: 722]

moral right and wrong . . . [as] totally . . . concerned with producing desirable results. The end, indeed, does justify the means, according to utilitarianism The debate between deontology and consequentialism has remained fundamentally important in philosophical ethics.

Implicit in some of the arguments advanced in this paper is a deontological perspective that exposing potentially vulnerable population subgroups to undue risks by means of government statistical operations is morally wrong, even if little or no actual harm results. The author's individual views on this specific issue, however, are independent of the general thesis of the paper that a heightened awareness of ethical issues will be of benefit to the country and the federal statistical system generally.

3. For a more extended discussion of the issue of motivation, see Seltzer and Anderson [2001].

4. For a more extensive discussion of these safeguards, see Seltzer and Anderson [2001]. For a discussion of ways of countering threats to the integrity of a national statistical system (that is, traditional harms in the language of the present paper), see Seltzer [1994: 13-20]. The specific factors identified and discussed there were: (1) long tradition of statistical integrity, (2) strong links between statistical user and producer community, (3) uncensored and active journalism, (4) pre-announced schedule of release dates, (5) active professional statistical society, (6) sound civil service system, (7) laws relating to the independent status of statistical information and operations, (8) location of the statistical service within the governmental service, (9) stature and contractual status of the head of the statistical service, and (10) international support. Unfortunately, this list neglected to explicitly include the role that an awareness of ethical issues, based on agreed norms, can play in protecting against traditional harm and promoting statistical integrity.

5. With regards to sanctions, the ASA by-laws [ASA, 2001b] provide that

If a member acts in a manner detrimental to the Association, the Board of Directors shall give notice to the member describing such charges. The member shall then have due opportunity to respond and to have a hearing by a committee appointed by the Board of Directors. After reviewing the committee's report on the hearing, the Board of Directors may terminate membership by a vote of at least two-thirds of its members.

6. See Seltzer [1994: 23 and 25-26], for a presentation of these issues in an international context.

7. The model of research harm that underlies all discussions of research risk and related procedural safeguards, over the past 60 years at least, has been essentially a medical model. This model is based on the assumption that the main threat of research is to the physical or psychological well being of the individual research subject occasioned by the invasive acts of the researcher on the body or mind of the subject [Vanderpool, 1996]. By contrast, in most social research, invasive acts of the researcher on the body or mind of the research subject are rare. The threats here, if any, usually arise from the information obtained about the research subjects and the risks are borne not just by the individual research subject but also by other members of the potentially vulnerable population subgroups to which the research subject belongs. The use of a risk model that attributes all harm to invasive acts and none to information and which focuses only on individual risk and does not examine group risk can potentially lead to serious distortions of the ethical review process. (For clarity, I emphasize that group risk exists even when all indirect harm arising from data-based policy decisions, whether just or unjust, is excluded from the risk benefit analysis. Such an exclusion leaves in place the group risk arising from the possibility of adverse operational activities directed against the group based on *meso* data. Several instances of such harm are listed in Table 1 and discussed in Seltzer and Anderson [2001].) Actually, some recent developments in genetic research are also beginning to suggest the need to take account information threats and group risk in biomedical ethics [Murphy and Lapp , 1994].

8. Clark (2001) recently reported that the Census Bureau identified 22 work force competencies needed for mathematical statisticians, indicating that this information provided useful guidance in developing training that might be provided to Bureau staff. Even though 15 of these competencies were non-technical in nature, ethics was not one of the areas identified. Fortunately, for those employees who had participated in the Joint Program on Survey Methods, some exposure to the discussion of ethical issues in the context of the federal statistical system is provided.

The American Statistical Association (ASA) was founded in 1839, but it was 1949 before an ASA committee recommended developing a code of ethical practice. This was followed by years of discussion. In 1981, the ASA Board of Directors approved a Code of Conduct on a "three-year trial basis." A few years later, the Committee on Professional Ethics was designated as a permanent ASA Committee. The principles expressed here should guide both those whose primary occupation is statistics and those in all other disciplines who use statistical methods in their professional work." The guidelines are now around half the previous length. They may differ from the earlier set in emphasis and tone, but are not a fundamentally different approach. The American Statistical Association's Ethical Guidelines for Statistical Practice are intended to help statistics practitioners make decisions ethically. Additionally, the ethical guidelines aim to promote accountability by informing those who rely on statistical analysis of the standards they should expect. The discipline of statistics links the capacity to observe with the ability to gather evidence and make decisions, providing a foundation for building a more informed society. Because society depends on informed judgments supported by statistical methods, all practitioners of statistics"r American Statistical Association (2016). Ethical Guidelines for Statistical Practice. Alexandria, VA: American Statistical Association. Available: <http://www.amstat.org/ASA/Your-Career/Ethical-Guidelines-for-Statistical-Practice.aspx>. Biemer, P., D. Trewin, H. Bergdahl, and J. Lilli (2014). Panel on Improving Federal Statistics for Policy and Social Science Research Using Multiple Data Sources and State-of-the-Art Estimation Methods, R.M. Groves and B.A. Harris-Kojetin, eds. Committee on National Statistics. Washington, DC: The National Academies Press. Statistical Standards of the National Center for Education Statistics. First issued in 1987, revised in 1992 and 2002, and updated in 2012. Washington, DC: U.S. Department of Education.