



ISI - INTERNATIONAL STATISTICAL INSTITUTE

DECLARATION ON PROFESSIONAL ETHICS

Adopted: August 1985

Background note

The involvement of the International Statistical Institute in establishing a declaration on professional ethics has extended over seven years. The Bureau of the Institute, in response to representations by members and a proposal by the Institute's Committee on Future Directions, established a Committee on a Code of Ethics for Statisticians, in 1979, during the 42nd ISI Session in Manila. The Committee worked to prepare a plenary meeting at the subsequent Buenos Aires Session in 1981 during which a consensus in favour of drawing up a code developed: the 'code' was to be prepared for acceptance by the Institute during its Centenary Celebration in 1985.

The Committee was composed of Roger Jowell (Chairman), W. Edwards Deming, Arno Donda, Helmut V. Muhsam and Edmund Rapaport, and it subsequently co-opted Edmundo Berumen-Torres, Gilbert Motsemme and Rene Padieu.

The Declaration which has emerged is the result of an extensive process of drafting and redrafting, of consultation with the entire ISI membership and with the ISI's Sections, of open meetings and written consultations which occurred between December 1981 and August 1985. The drafting of the Declaration provoked much interest and genuine debate which continued into the week before it was to be placed before the General Assembly of the Institute for adoption.

After due consideration and deliberation the General Assembly adopted the following resolution on 21 August 1985: 'The General Assembly of the International Statistical Institute,

1. recognising 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;

2. determines to send the Declaration to all members of the ISI and its Sections and to disseminate it, as appropriate, within the statistical profession;
3. commends the Committee responsible for developing the Declaration for its thorough, efficient and successful work during the last five years.'

In accordance with the spirit and letter of the resolution the International Statistical Institute is privileged to present to the reader the ISI Declaration on Professional Ethics with the hope and in the belief that this document will assist colleagues throughout the world in the pursuit of their professional goals and responsibilities.

Preamble

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 its own ethical approach. Many statisticians work in fields such as economics, psychology, sociology, medicine, whose practitioners have ethical conventions that may influence the conduct of statisticians in their fields. Even within the same setting and branch of statistics, individuals may have different moral precepts which guide their work. Thus, no declaration could successfully impose a rigid set of rules to which statisticians everywhere should be expected to adhere, and this document does not attempt to do so.

The aim of this declaration is to enable the statistician's individual ethical judgements and decisions to be informed by shared values and experience, rather than to be imposed by the profession. The declaration therefore seeks to document widely held principles of statistical inquiry and to identify the factors that obstruct their implementation. It is framed in the recognition that, on occasions, the operation of one principle will 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, implicit or explicit choices between principles will sometimes have to be made. The declaration does not attempt to resolve these choices or to allocate greater priority to one of its principles than to another. Instead it offers a framework within which the conscientious statistician should, for the most part, be able to work comfortably. Where departures from the framework of principles are contemplated, they should be the result of deliberation rather than of ignorance.

The declaration's first intention is thus to be informative and descriptive rather than authoritarian or prescriptive. Second, it is designed to be applicable as far as possible to different areas of statistical methodology and application. For this reason its provisions are fairly broadly drawn. 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. Fourth, neither the principles nor the commentaries are concerned with general written or unwritten rules or norms such as compliance with the law or the need for probity. The declaration restricts itself as far as possible to matter of specific concern to statistical inquiry.

The text is divided into four sections, each of which contains principles or sets of principles followed by short commentaries on the conflicts and difficulties inherent in their operation. The principles are interrelated and therefore need to be considered together; their order of presentation should not be taken as an order of precedence.

At the end of each section, as here, a short annotated bibliography is provided for those who wish to pursue the issues or to consult more detailed texts.

General bibliography

Sjoberg (1967) though now somewhat dated, provides good historical background. Freund (1969) is written under the shadow of the biomedical paradigm, but includes a vigorous statement by Margaret Mead of the differences, on the ethical dimension, between biomedical and social science research. Diener & Crandall (1978) is a general discussion, particularly useful with reference to field experiments. Reynolds (1982) (which is a condensed and updated version of Reynolds (1979)) is a clearly written text aimed mainly at American university students. Bulmer (1979) contains reprinted and new articles on survey research and census taking in Britain and America. Barnes (1980) is an attempt to analyse sociologically why ethics has become a problem and has a full bibliography to 1978. Bower and Gasparis (1978) has a bibliography of works published between 1965 and 1976 with particularly full annotations. Bulmer (1982) contains a good bibliography on covert research and related topics. Jowell (1983) states the case for an educational, rather than a regulatory or aspirational, code, and has a bibliography with many items of special interest to statisticians. Burgess (1984) focusses on ethnographic research by sociologists in Britain. Barnes (1984) argues that ethical compromises are unavoidable in social inquiry. Other attempts have been made to formulate codes of ethics for statisticians: an earlier attempt (Deming 1972) is the outcome of the work of a Committee to Study Problems of Professional Ethics established in 1969 by the ISI; it relates mostly to the relations between the consulting statistician and his or her client. Another attempt (ASA 1980) is fully discussed by 15 authors under the title 'Ethical Guidelines for Statistical Practice: Historical Perspective, Report on the ASA ad hoc Committee on Professional Ethics, and Discussion (ASA 1983)'. More recently, French public statisticians have developed and adopted a code of ethics (AIS, 1984). Similarly, the British Government Statistical Service has produced its own Code of Practice (GSS, 1984).

1 Obligations to society

1.1 Considering conflicting interests

Statistical inquiry is predicated on the belief that greater access to well-grounded information is beneficial to society. The fact that statistical information can be misconstrued or misused, or that its impact can be different on different groups, is not in itself a convincing argument against its collection and dissemination. Nonetheless, the statistician should consider the likely consequences of collecting and disseminating various types of data and should guard against predictable misinterpretations or misuse.

No generic formula or guidelines exist for assessing the likely benefit or risk of various types of statistical inquiry. Nonetheless, the statistician has to be sensitive to the possible consequences of his or her work (see Clause 4.4), in the knowledge that society's entitlement to know about its collective characteristics sometimes conflicts with the individual's entitlement to protect his or her privacy.

All information, whether systematically collected or not, is subject to misuse. And no information is devoid of possible harm to one interest or another. Individuals may be harmed by their participation in statistical inquiries (see Clause 4.4), or group interests may be damaged by certain findings. A particular district may, for instance, be negatively stereotyped by a statistical inquiry which finds that it contains a very high incidence of crime. A group interest may also be harmed by social or political action based on statistical findings. For instance, heavier policing of a district in which crime is found to be high may be introduced at the expense of lighter policing of a district in which crime is found to be high may be introduced at the expense of lighter policing in

low crime districts. Such a move may be of aggregate benefit to society but to the detriment of some districts. Statisticians are not, however, in a position to prevent action based on statistical data. Indeed, to guard against the use of their findings would be to disparage the very purpose of much statistical inquiry.

1.2 Widening the scope of statistics

Statisticians should use the possibilities open to them to extend the scope of statistical inquiry, and to communicate their findings, for the benefit of the widest possible community.

Statisticians develop and use concepts and techniques for the collection, analysis or interpretation of data. Although they are not always in a position to determine the scope of their work or the way in which their data are used and disseminated, they are frequently able to influence these matters. In addition, they are in a position to devise more efficient uses of resources through, say, developing sampling techniques or introducing new uses for existing data (see Clause 4.3c).

Academic statisticians enjoy probably the greatest degree of autonomy over the scope of their work and the dissemination of their results. Even so, they are generally dependent on the decisions of funders on the one hand and journal editors on the other for the direction and publication of their inquiries.

Statisticians employed in the public sector and those employed in commerce and industry tend to have even less autonomy over that they do or how their data are utilised. Rules of secrecy may apply; pressure may be exerted to withhold or delay the publication of findings (or of certain findings); statistical series may be introduced or discontinued for reasons that have little to do with technical considerations. In these cases the final authority for decisions about an inquiry may rest with the employer or client. (See Clause 2.3).

Professional experience in many countries suggests that statisticians are most likely to avoid restrictions being placed on their work when they are able to stipulate in advance the issues over which they should maintain control. Government statisticians may, for example, gain agreement to announce dates of publication for various statistical series, thus creating an obligation to publish the data on the due dates regardless of intervening political factors. Similarly, statisticians in commercial contracts may specify that control over at least some of the findings (or details of methods) will rest in their hands rather than with their clients. The greatest problems seem to occur when such issues remain unresolved until the data emerge.

1.3 Pursuing objectivity

While statisticians operate within the value systems of their societies, they should attempt to uphold their professional integrity without fear or favour. They should also not engage or collude in selecting methods designed to produce misleading results, or in misrepresenting statistical findings by commission or omission.

Science can never be entirely objective, and statistics is no exception. The selection of topics for attention may reflect a systematic bias in favour of certain cultural or personal values. In addition, the employment base of the statistician, the source of funding and a range of other factors may impose certain priorities, obligations and prohibitions. Even so, the statistician is never free of a responsibility to pursue objectivity and to be open

about known barriers to its achievement. In particular, statisticians are bound by a professional obligation to resist approaches to data collection, analysis, interpretation and publication that are likely (explicitly or implicitly) to misinform or to mislead rather than to advance knowledge.

Bibliography: Obligations to society

Many books or symposia on professional ethics contain discussions of the broad context in which social inquiry is carried on, but in most cases these discussions are scattered throughout the text. Beauchamp et al. (1982) contains, in Part 2, an explicit general discussion of how and when the practice of social inquiry can or cannot be justified. The social researcher's legal and formal social obligations are analysed, in the United States context, in Beauchamp et al. (1982), Part 5. Pool (1979 & 1980) argue the case for not imposing any formal controls. Douglas (1979) does the same, more vigorously. Wax & Cassell (1981) discusses the relation between legal and other formal constraints and the social scientist's own sets of values. Frankel (1976) refers more specifically to statistics.

1.1 Considering conflicting interests

BAAS (1974) discusses these conflicts in a British, but now somewhat out-of-date, context. Baumring (1972) contrasts the interest of scientists and research subjects, favouring the latter. Ackeroyd (1984), Section 6.3, deals with conflicts of interest in ethnographic inquiry. Muhsam (1985) discusses the conflict between the right to privacy and the right to know.

The usefulness of statistical information is rarely challenged and most of the relevant literature refers merely to ways and means of enhancing its usefulness. At the Centenary Session of the ISI a meeting was devoted to this subject with special reference to developing countries (see: Chakravarty, (1985); Nyitrai, (1985); Williams, (1985)).

1.2 Widening the scope of statistics

Diener & Crandall (1978), Chapter 13, discusses this topic with reference to psychological research. Crispo (1975) presents a discussion of public accountability from a Canadian standpoint. Johnson (1982) deals with the hazards that arise in publishing research findings. Jahoda (1981) demonstrates vividly the ethical and social considerations that limit the conduct of inquiry and the publication of results.

1.3 Pursuing objectivity

Stocking and Dunwoody (1982) outline some of the pressures against the preservation of objective standards that are exerted by the mass media. In more general terms, Klaw (1970) suggests that these standards can never remain untarnished.

2. Obligations to funders and employers

2.1 Clarifying obligations and roles

Statisticians should clarify in advance the respective obligations of employer or funder and statistician; they should, for example, refer the employer or funder to the relevant parts of a professional code to which they adhere. Reports of the findings should (where appropriate) specify their role.

2.2 Assessing alternatives impartially

Statisticians should consider the available methods and procedures for addressing a proposed inquiry and should provide the funder or employer with an impartial assessment of the respective merits and demerits of alternatives.

2.3 Not pre-empting outcomes

Statisticians should not accept contractual conditions that are contingent upon a particular outcome from a proposed statistical inquiry.

2.4 Guarding privileged information

Statisticians are frequently furnished with information by the funder or employer who may legitimately require it to be kept confidential. Statistical methods and procedures that have been utilised to produce published data should not, however, be kept confidential.

An essential theme underlying each of the above principles is that a common interest exists between funder or employer and statistician as long as the aim of statistical inquiry is to advance knowledge. (See Clause 1.3). Although such knowledge may on occasions be sought for the limited benefit of the funder or employer, even that cause is best served if the inquiry is conducted in an atmosphere conducive to high professional standards. The relationship between funder or employer and statistician should therefore be such as to enable statistical inquiry to be undertaken as objectively as possible (see Clause 1.3) with a view to providing information or explanations rather than advocacy.

The independent statistician or consultant appears to enjoy greater latitude than the employee- statistician to insist on the application of certain professional principles. In his or her case, each relationship with a funder may be subject to a specific contract in which roles and obligations may be specified in advance (see Deming 1972). In the employee's case, by contrast, his or her contract is not project-specific and generally comprises an explicit or implicit obligation to accept instructions from the employer. The employee-statistician in the public sector may be restricted further by statutory regulations covering such matters as compulsory surveys and official secrecy. (See Clause 4.4).

In reality, however, the distinction between the independent statistician and the employee-statistician is blurred by other considerations. The independent statistician's discretion to insist on certain conditions is frequently curtailed by financial constraints and by the insecurity of the consultant's status. These problems apply less to the employee-statistician, whose base is generally more secure and whose position is less isolated. The employee (particularly the government statistician) is often part of a community of statisticians who are in a strong position to establish conventions and procedures that comfortably accommodate their professional goals (see Clause 1.2).

Relationships with funders or employees involve mutual responsibilities. The funder or employer is entitled to expect from statisticians a command of their discipline, candour in relation to limitations of their expertise and of their data (see Clause 3.1), openness about the availability of more cost-effective approaches to a proposed inquiry, discretion with confidential information. Statisticians are entitled to expect from the funder or employer a respect for their exclusive professional and technical domain and for the integrity of the data. Whether or not these obligations can be built into contracts or

written specifications, they remain preconditions of a mutually beneficial relationship.

A conflict of obligations may occur when the funder or an inquiry wishes to ensure in advance (say in a contract) that certain results will be achieved, such as particular findings or a minimum response level in a voluntary sample survey. By agreeing to such a contract the statistician would be pre-empting the results of the inquiry by having made implicit guarantees on behalf of potential subjects as to their propensity to participate or the direction of their response. To fulfil these guarantees, the statistician may then have to compromise other principles, such as the principle of informed consent. (See Clause 4.2).

Above all, statisticians should attempt to ensure that funders and employers appreciate the obligations that statisticians have not only to them, but also to society at large, to subjects, to professional colleagues and collaborators. One of the responsibilities of the statistician's professional citizenship, for instance, is to be open about methods in order that the statistical community at large can assess, and benefit from, their application. Thus, insofar as it is practicable, methodological components of inquiries should be free from confidentiality restrictions so that they can form part of the common intellectual property of the profession. (See Clause 3.2).

Bibliography: Obligations to funders and employers

2.1 Clarifying obligations and roles

Appell (1978), Section 8, presents examples from ethnographic inquiries. Deming (1965 and 1972) specifies the roles of the consulting statistician and his or her client.

2.2 Assessing alternatives impartially

Many journal articles and chapters in books discuss this topic in general terms. Schuler (1982), Chapter 3, deals with the difficulties encountered in psychological research. Webb et al. (1966) is the popular source for alternative procedures of inquiry.

2.3 Not pre-empting outcomes

Barnett (1983) discusses this point, with reference to his own local context.

2.4 Guarding privileged information

SCPR Working Party (1974) is a general discussion of privacy in a British context, now somewhat out-of-date. Simmel (1908: 337-402) & (1952: 305-376) is the classic sociological analysis of constraints on the flow of information. Shils (1967) extends simmel's work to more recent conditions; Tefft (1980) provides exotic case studies of perceptions of privacy and secrecy. Flaherty (1979) discusses the issues posed by the monopolization of data by governments, while Bulmer (1979) looks more broadly at data obtained in censuses and large surveys. Carroll and Kneer (1976) looks, from the standpoint of political science in America, at official pressure on scientists to reveal sources of information. Appell (1979), Section 3, gives a range of dilemmas arising from various kinds of official pressure. Bok (1982) prescribes norms for concealment and revelation.

3. Obligations to colleagues

3.1 Maintaining confidence in statistics

Statisticians depend upon the confidence of the public. They should in their work attempt to promote and preserve such confidence without exaggerating the accuracy or explanatory power of their data.

3.2 Exposing and reviewing methods and findings

Within the limits of confidentiality requirements, statisticians should provide adequate information to colleagues to permit their methods, procedures, techniques and findings to be assessed. Such assessments should be directed at the methods themselves rather than at the individuals who selected or used them.

3.3 Communicating ethical principles

To conduct certain inquiries statisticians need to collaborate with colleagues in other disciplines, as well as with interviewers, clerical staff, students, etc. In these cases statisticians should make their own ethical principles clear and take account of the ethical principles of their collaborators.

Each of these principles stems from the notion that statisticians derive their status and certain privileges of access to data not only by virtue of their personal standing but also by virtue of their professional citizenship. In acknowledging membership of a wider statistical community, statisticians owe various obligations to that community and can expect consideration from it.

The reputation of statistics will inevitably depend less on what professional bodies of statisticians assert about their ethical norms than on the actual conduct of individual statisticians. In considering the methods, procedures, content and reporting of their inquiries, statisticians should therefore try to ensure that they leave a research field in a state which permits further access by statisticians in the future. (See Clause 4.1).

Statistical inquiries are frequently collaborative efforts among colleagues of different levels of seniority and from different disciplines. The reputations and careers of all contributors need to be taken into account. The statistician should also attempt to ensure that statistical inquiries are conducted within an agreed ethical framework, perhaps incorporating principles or conventions from other disciplines, and that each contributor's role is sufficiently defined. The World Medical Association's Declaration of Helsinki (1975), for instance, gives excellent guidance to statisticians in the field of medicine.

A principle of all scientific work is that it should be open to scrutiny, assessment and possible validation by fellow scientists. Particular attention should be given to this principle when using computer software packages for analysis by providing as much detail as possible. Any perceived advantage of withholding details of techniques or findings, say for competitive reasons, needs to be weighed against the potential disservice of such an action to the advancement of statistical knowledge.

One of the most important but difficult responsibilities of the statistician is that of alerting potential users of their data to the limits of their reliability and applicability. The twin dangers of either overstating or understating the validity or generalisability of data are nearly always present. No general guidelines can be drawn except for a counsel of caution. Confidence in statistical findings depends critically on their faithful representation. Attempts by statisticians to cover up errors (see Ryten, 1981), or to invite over-interpretation, may not only rebound on the statisticians concerned but also

on the reputation of statistics in general. (See Clause 1.1).

Bibliography: Obligations to colleagues

3.1 Maintaining confidence in statistics

Reynolds (1975): 598-604 discusses conflicts between, on the one hand, obligations to keep science objective and impartial and, on the other, values held as citizens about trying to change the world. The problems involved in presenting the limitations on the accuracy of statistical data are discussed at length by Gonzales et al. (1975). A more controversial stance in relation to errors is expressed by Ryten (1981).

3.2 Exposing and reviewing methods and findings Diener & Crandall (1978), Chapter 9, discusses the need for honesty and accuracy. Powell (1983) outlines the conflicts that arise when an academic merits censure from colleagues because of improper professional conduct.

3.3 Communicating ethical principles Appell (1978) deals with how to alert ethnographers to ethical issues.

4. Obligations to subjects*

*This section of the declaration refers to human subjects, including individuals, households and corporate entities. For a set of guidelines on animal experimentation, for instance, see the Swiss Academy of Science (1983).

4.1 Avoiding undue intrusion

Statisticians should be aware of the intrusive potential of some of their work. They have no special entitlement to study all phenomena. The advancement of knowledge and the pursuit of information are not themselves sufficient justifications for overriding other social and cultural values.

Some forms of statistical inquiry appear to be more intrusive than others. For instance, statistical samples may be selected without the knowledge or consent of their members; contact may be sought with subjects without advance warning; questions may be asked which cause distress or offence; people may be observed without their knowledge; information may be obtained from third parties. In essence, people may be inconvenienced or aggrieved by statistical inquiries in a variety of ways, many of which are difficult to avoid. (See also Clause 1.3).

One way of avoiding inconvenience to potential subjects is to make more use of available data instead of embarking on a new inquiry. For instance, by making greater statistical use of administrative records, or by linking records, information about society may be produced that would otherwise have to be collected afresh. Although some subjects may have objections to the data's being used for a different purpose from that intended, they would not be adversely affected by such uses provided that their identities are protected and that the purpose is statistical, not administrative.

As Cassell (1982) argues, people can feel wronged without being harmed by research: they may feel they have been treated as objects of measurement without respect for their individual values and sense of privacy. In many of the statistical inquiries that have caused controversy, the issue has had more to do with intrusion into subjects' private

and personal domains, or with overburdening subjects by collecting 'too much' information, rather than with whether or not subjects have been harmed. By exposing subjects to a sense of being wronged, perhaps by the method of selection or by causing them to acquire self-knowledge that they did not seek or want, statisticians are vulnerable to criticism. Resistance to statistical inquiries in general may also increase. (See also Clauses 3.1, 4.3c, 4.5 and 4.6). p>4.2 Obtaining informed consent

Statistical inquiries involving the active participation of human subjects should be based as far as practicable on their freely given informed consent. Even if participation is required by law, it should still be as informed as possible. In voluntary inquiries, subjects should not be under the impression that they are required to participate; they should be aware of their entitlement to refuse at any stage for whatever reason and to withdraw data just supplied. Information that would be likely to affect a subject's willingness to participate should not be deliberately withheld.

The principle of informed consent from subjects is necessarily vague, since it depends for its interpretation on unstated assumptions about the amount of information and the nature of consent required to constitute acceptable practice. The amount of information needed to ensure that a subject is adequately informed about the purpose and nature of an inquiry is bound to vary from study to study. No universal rules can be framed. At one extreme it is inappropriate to overwhelm potential subjects with unwanted and incomprehensible details about the origins and content of a statistical inquiry. At the other extreme it is inappropriate to withhold material facts or to mislead subjects about such matters. (See Clauses 4.3d and 4.4). The appropriate information requirement clearly falls somewhere between these positions but its precise location depends on circumstances. The clarity and comprehensibility of the information provided are as important as the quantity.

An assessment needs to be made of which items of information are likely to be material to a subject's willingness to participate. The following items are among those from which a selection might be made:

- (i) purpose of study, policy implications, etc.;
- (ii) identity of funder(s);
- (iii) anticipated uses of the data, form of publication, etc.;
- (iv) identity of interviewer/experimenter and organisational base;
- (v) method by which subject has been chosen (sampling frame, etc.);
- (vi) subject's role in study;
- (vii) possible harm or discomfort to subject;
- (viii) degree of anonymity and confidentiality;
- (ix) proposed data storage arrangements, degree of security, etc.;
- (x) procedures of study (time involved for participant, etc.);
- (xi) whether participation is voluntary or compulsory;

- (a) if compulsory, potential consequences of non-compliance;
- (b) if voluntary, entitlement to withdraw consent (and when that entitlement lapses);
- (xii) whether material facts have been withheld (and when or if such facts will be disclosed).

In selecting from this list, the statistician should consider not only those items that he or she regards as material, but those which the potential subject is likely to regard as such. Each party may well have special (and different) interests. As a means of supplementing the information selected, the statistician may choose to give potential subjects a declaration of their entitlement (see Jowell, 1981) which informs them of their right to information but leaves the selection of extra details in the subject's control.

Just as the specification of adequate information varies, so does the specification of adequate consent. A subject's participation in a study may be based on reluctant acquiescence rather than on enthusiastic co-operation. In some cases, the statistician may feel it is appropriate to encourage a sense of duty to participate in order to minimise volunteer bias. The boundary between tactical persuasion and duress is sometimes very fine and is probably easier to recognise than to stipulate. In any event, the most specific generic statement that can be made about adequate consent is that it falls short both of implied coercion and full-hearted participation.

On occasions, a 'gatekeeper' blocks access to subjects so that statisticians cannot approach them directly for their participation without the gatekeeper's permission. While respecting the gatekeeper's legitimate interests statisticians should still adhere to the principle of obtaining informed consent directly from subjects once they have gained access to them. In these cases, statisticians should not devolve their responsibility to protect the subject's interests onto the gatekeeper. They should also be wary of inadvertently disturbing the relationship between subject and gatekeeper.

The principle of informed consent is, in essence, an expression of belief in the need for truthful and respectful exchanges between statisticians and human subjects. It is clearly not a precondition of all statistical inquiry. Nonetheless, the acceptability of statistics depends increasingly not only on technical considerations but also on the willingness of statisticians to accord respect to their subjects and to treat them with consideration (see Clause 4.1). Statisticians should attempt to ensure that subjects appreciate the purpose of a statistical inquiry, even when the subject's participation is required by law.

4.3 Modifications to informed consent

On occasions, technical or practical considerations inhibit the achievement of prior informed consent. In these cases, the subjects' interests should be safeguarded in other ways. For example:

(a) Respecting rights in observation studies. In observation studies, where behaviour patterns are recorded without the subject's knowledge, statisticians should take care not to infringe what may be referred to as the 'private space' of an individual or group. This will vary from culture to culture.

(b) Dealing with proxies. In cases where a 'proxy' is utilised to answer questions on behalf of a subject, say because access to the subject is uneconomic or

because the subject is too ill or too young to participate directly, care should be taken not to infringe the 'private space' of the subject or to disturb the relationship between the subject and the proxy. Where indications exist or emerge that the subject would object to certain information being disclosed, such information should not be sought by proxy.

(c)Secondary use of records. In cases where a statistician has been granted access to, say, administrative or medical records or other research material for a new or supplementary inquiry, the custodian's permission to use the records should not relieve the statistician from having to consider the likely reactions, sensitivities and interests of the subjects concerned, including their entitlement to anonymity.

(d)Misleading potential subjects. In studies where the measurement objectives preclude the prior disclosure of material information to subjects, statisticians should weigh the likely consequences of any proposed deception. To withhold material information from, or to misinform, subjects involves a deceit, whether by omission or commission, temporarily or permanently, which will face legitimate censure unless it can be justified.

A serious problem arises for statisticians when methodological requirements conflict with the requirement of informed consent. Many cases exist in which the provision of background information to subjects (say, about the purpose or sponsorship of a study), or even the process of alerting them to the fact that they are subjects (as in observation studies), would be likely to produce a change or reaction that would defeat or interfere with the objective of the measurement. These difficulties may lead statisticians to waive informed consent and to adopt either covert measurement techniques or deliberate deception in the interests of accuracy.

The principles above urge extreme caution in these cases and advise statisticians to respect the imputed wishes of subjects. Thus, in observation studies or in studies involving proxies, the principle to be followed is that mere indications of reluctance on the part of an uninformed or unconsenting subject should be taken as a refusal to participate. Similarly, in the case of secondary use of records, statisticians should have regard to any obligations already owed to subjects. Any other course of action in these cases would be likely to demonstrate a lack of respect for the subject's interests and to undermine the relationship between statistician and subject.

Statistical inquiries involving deliberate deception of subjects (by omission or commission) are rare and extremely difficult to defend. Clear methodological advantages exist for deception in some psychological studies, for instance, where revealing the purpose would tend to bias the responses. But, as Diener and Crandall (1978) have argued 'science itself is built upon the value of truth'; thus deception by scientists will tend to destroy their credibility and standing (see Clause 3.1). If deception were widely practised in statistical inquiries, subjects would, in effect, be taught not to 'trust those who by social contract are deemed trustworthy and whom they need to trust' (Baumrind, 1972).

Nonetheless, it would be as unrealistic to outlaw deception in statistical inquiry as it would be to outlaw it in social interaction. Minor deception is employed in many forms of human contact (tact, flattery, etc.) and statisticians are no less likely than the rest of the population to be guilty of such practices. It remains the duty of statisticians and their collaborators, however, not to pursue methods of inquiry that are likely to infringe

human values and sensibilities. To do so, whatever the methodological advantages, would be to endanger the reputation of statistics and the mutual trust between statisticians and society which is a prerequisite for much statistical work. (See Clause 3.1).

For these reasons, where informed consent cannot be acquired in advance, there is a case, where practicable, for seeking it post hoc, once the methodological advantage - of covert observation, of deception, or of withholding information - has been achieved.

4.4 Protecting the interests of subjects

Neither consent from subjects nor the legal requirement to participate absolves the statistician from an obligation to protect the subject as far as possible against potentially harmful effects of participating. The statistician should try to minimise disturbance both to subjects themselves and to the subjects' relationships with their environment.

Harm to subjects may arise from undue stress through participation, loss of self-esteem, psychological injury or other side effects. Various factors may be important in assessing the risk-benefit ratio of a particular inquiry, such as the probability of risk, the number of people at risk, the severity of the potential harm, the anticipated utility of the findings, few of which are usually quantifiable (see Levine, 1975).

When the probability or potential severity of harm is great, statisticians face a more serious dilemma. A statistician may, for instance, be involved in a medical experiment in which risks to subjects of some magnitude are present. If volunteers can be found who have been told of the risks, and if the statistician is convinced of the importance of the experiment, should he or she nonetheless oppose the experiment in view of the risks? In these circumstances, probably the best advice is to seek advice - from colleagues and others, especially from those who are not themselves parties to the study or experiment.

The interests of subjects may also be harmed by virtue of their membership of a group or section of society (see Clause 1.1). So statisticians can rarely claim that a prospective inquiry is devoid of possible harm to subjects. They may be able to claim that, as individuals, subjects will be protected by the device of anonymity. But, as members of a group or indeed as members of society itself, no subject can be exempted from the possible effects of decisions based on statistical findings.

4.5 Maintaining confidentiality of records

Statistical data are unconcerned with individual identities. They are collected to answer questions such as 'how many?' or 'what proportion?', not 'who?'. The identities and records of co-operating (or non-cooperating) subjects should therefore be kept confidential, whether or not confidentiality has been explicitly pledged.

4.6 Inhibiting disclosure of identities

Statisticians should take appropriate measures to prevent their data from being published or otherwise released in a form that would allow any subject's identity to be disclosed or inferred.

There can be no absolute safeguards against breaches of confidentiality, that is the

disclosure of identified or identifiable data in contravention of an implicit or explicit obligation to the source. Many methods exist for lessening the likelihood of such breaches, the most common and potentially secure of which is anonymity. Its virtue as a security system is that it helps to prevent unwitting breaches of confidentiality. As long as data travel incognito, they are more difficult to attach to individuals or organisations.

There is a powerful case for identifiable statistical data to be granted 'privileged' status in law so that access to them by third parties is legally blocked in the absence of the permission of the responsible statistician (or his or her subjects). Even without such legal protection, however, it is the statistician's responsibility to ensure that the identities of subjects are protected.

Anonymity alone is by no means a guarantee of confidentiality. A particular configuration of attributes can, like a fingerprint, frequently identify its owner beyond reasonable doubt. So statisticians need to counteract the opportunities for others to infer identities from their data. They may decide to group data in such a way as to disguise identities (see Boruch & Cecil, 1979) or to employ a variety of available measures that seek to impede the detection of identities without inflicting very serious damage to the aggregate dataset (see Flaherty, 1979). Some damage to analysis possibilities is unavoidable in these circumstances, but it needs to be weighed against the potential damage to the sources of data in the absence of such action. (See Finney, 1984).

The widespread use of computers is often regarded as a threat to individuals and organisations because it provides new methods of disclosing and linking identified records. On the other hand, the statistician should attempt to exploit the impressive capacity of computers to disguise identities and to enhance data security.

Bibliography: Obligations to subjects

4.1 Avoiding undue intrusion

Boruch & Cecil (1979 & 1982) describe sampling and statistical techniques for preserving privacy. Hartley (1983) outlines the threats to privacy entailed by various sampling procedures. Michael (1984) is a journalistic account of the threats to privacy from all sources in Britain. Mirvis and Seashore (1982) is a general discussion of research in organisations, where questions about the appropriate extent of intrusion and intervention are particularly pressing. Reeves and Harper (1981) is a text on organisation research in a British industrial context. The necessity of some intrusion into the privacy of respondents to collect information that can be obtained only by individual interviews is referred to by Bryant and Hansen (1976).

4.2 Obtaining informed consent

Wax (1979 & 1982) argues for the inappropriateness of required informed consent in ethnographic inquiry, while Capron (1982) defends the requirement. O'Connor (1976) discusses problems of interpreting consent, or lack of it, in hierarchical field settings such as prisons. Bulmer (1982) presents an extended case against covert social inquiry. O'Connor & Barnes (1983) makes a brief defence of some covert research. Singer (1978) and Jowell (1979) report empirical evidence about the differential effects of seeking informed consent from survey respondents. The relevance of the principle of informed consent to statistical inquiries is critically discussed by Dalenius (1983) and questioned by Hansen (1983).

4.3 Modifications to informed consent

Douglas (1979) argues against formal requirements to obtain consent. Geller (1982) makes suggestions about how to avoid having to deceive research subjects. Form (1973) deals at length with relations between scientists and gatekeepers.

4.4 Protecting the interests of subjects

Baumrind (1972) is a plea for priority for the interests of research subjects. Klockars (1979) discusses how to handle these interests when they seem to be anti-social and/or illegal. Freidson (1978) argues in favour of the routine destruction of all identifiers of data about individuals. Okely (1984) discusses the hazards in publishing findings on an identifiable social group in Britain. Loo (1982) gives a case study of research aimed at promoting the welfare of a deprived community. Canada Council (1977) discusses the special problems that arise in research on captive populations and on children. Warwick (1983) examines the particular ethical issues that may arise in some developing countries.

4.5, 4.6 Confidentiality and disclosure of identities

Boruch & Cecil (1979 & 1982) provide technical answers. Hartley (1982) discusses the relation between sampling and concealment. Legal and technical aspects of the protection of statistical data on individuals are presented by Dalenius (1979) and Durbin (1979) in the context of the laws and practices of their respective countries: Sweden and the U.K.

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