J. Statistics
1994 (1), 28-36

STATISTICAL INFORMATION

(Some ethical aspects)

By

AHMED Z. MEMON*

Statistics in its infancy was deemed nothing but a mockery of figures. Gradually, it started establishing its roots firmly in various public and private organizations, educational and research institutions. The early statisticians who made contributions in the development of statistical theory might not have visualized the extent of its future involvement in a community's life. Even when Statistics was known to many laymen through the phrase "there are lies, damn lies, and statistics", this discipline of knowledge kept on experiencing a rapid, honourable and effective growth due to its ever-increasing importance. Although some people still raise their eyebrows with odd suspicion at the name of this innocent science, their cynical attitude has much to do with the ethics of a statistician.

Statistical information where in the form of numerical data or a statistical concept evaluated, is a product generally not produced by just one hand. In whatever manner the information may be procured, it is regarded now-a-days an indispensable equipment of an educated mind for decision making. The important consideration is that statistical information should be useable so as to provide a basis on which a confident decision can be taken. It is primarily this reason that scientists and administrators are attracted to make use of Statistics in their respective fields.

Statistical information may not necessarily proceed from a single statistician or an individual qualified also in Statistics. At times it may be too erroneous, or contaminated by numerous errors and biases. As long as there are no deliberate errors, or manipulation of data to suit a particular interest, there is nothing unethical about it.

* *Former Professor of Statistics, University of Benghazi, Libya.*

1. CLASSES OF STATISTICIANS

Marriage of Statistics with any other science creates possibly a new speciality. Although there exist numerous specialities in Statistics, statisticians may be classified into three broad groups (teaching not included) in view of different levels of ethical problems springing up in their relationship with those with whom they have to come in contact for professional purposes. We have:

(i) Theorists who create concepts, theories, methods for collection and analysis of statistical data.

(ii) Specialists in agriculture, economics, accounting, education, health or other fields of knowledge. They are mostly concerned with theoretical or applied research for the advancement of their subject matter through statistical applications.

(iii) Those who render useful services to a community by the use of statistical tools in collection, tabulation, analysis and interpretation of numerical data. They may have a speciality in an area that bears relationship with the inquiry to be organized and managed.

The last two groups consist of what we term applied statisticians, but the distinction in them is motivated for ethical reasons.

The ethics of a statistical theorist do not worry a community in general. He is a researcher like any other theoretical scientist engaged in pursuit of profound discoveries. Nor the problem of statistical conduct becomes often acute or alarming in the case of the second group of statisticians. The scope of their statistical activities is distinctly defined and it is too narrow to bring them in sharp confrontation with the special interests of others. But the professionals collecting and analysing data carry the overall responsibility of organizing and executing statistical inquiries. Since in extensive inquiries there are many problems of management, the ethical challenge for them is in nature quite unlike that of their fellows in other classes.

2. MANAGEMENT OF STATISTICAL INQUIRES

Statistical inquires are fairly complicated when the material to be covered is large. The census of population is one example. An inquiry is normally made through a sample survey due to economic and technical reasons. Whether it is based on sampling or complete enumeration, its management involves administrative, financial and professional work (planning of sample surveys, personnel training, data collection, analysis and report writing). This task is executed some how. He may have to tackle a variety of complex situations; he has to be a good manager and a capable professional. His conduct may invite quite a criticism from people. Sometimes he is put to enormous inconvenience too. Even when he has a weak public concern, he is to be mentally ready to brave their anger, aggression, indifference and even humiliation. And, he must be honest in his dealings. Should he be not willing to make an assidous effort honestly, the results of his inquiry remain confounded by errors including those which can be eliminated otherwise.

3. OUR EXPECTATIONS FROM A STATISTICIAN IN (GROUP (iii))

Of course, the professional competence promotes the quality, value and respect of his statistical work, and has a positive effect on its reliability. But assuming that the statistician undertaking a certain statistical mission possesses the required qualifications, let us have glance at one's expectations from a fact-finding statistician as well as at the nature of his ethical problems. Perhaps, this is all the more important when intriguing influences about the subject of Statistics still flicker in the minds of people, or tend to invade or abuse their trust in its practitioners.

To all human endeavour, it is true that honesty, loyalty and dependability apply imperiously with more or less equal force. But a statistician has to accomplish his truth discovery task patiently and boldly through a chain of constantly treating barriers of limited time, trained personnel, equipment and budget. And then, the respondents too are being involved in this affair. Weather is yet another factor that may add problems and effect his task adversely. Any of these factors could offer him a temptation to follow an easy-go path and pollute his fact

finding mission. To unfold the truth concerning the parameters in a statistical inquiry, he seeks to look for the best possible course of action, both theoretically permissible and practically feasible, within the specified limits of resources. Whether it is collection, analysis, or interpretation of a statistical data, all these stages of statistical work need thorough care, meticulous attention and intellectual honesty of the statistician and his field and other staff involved. Since the basic information has to be the ground on which the whole monument of sophisticated analysis and conclusions is to be erected, it is imperative for him to make an impartial attempt to have this information measured as accurately as possible. If his respondent does not want to be quoted, referred to or identified, this anonymity should be firmly preserved at all costs. If his employer or client wants the findings of a study to stay confidential, this trust must not be betrayed. A great moral responsibility lies on the statistician, and to fulfill it he must be sure that his staff shares it to his satisfaction. It ought to be the bounding duty of a statistician to train his staff not only in `how to execute a statistical project' but also in `why to be intellectually honest'. Such training should be designed so as to hopefully expect to relieve his staff members from the pitfalls of figurative boredom, make them realize of enormous urgency and usefulness of their service, keep their interest alive in pursuit of `truth and nothing but truth', and indicate them with moral obligations in relation to their respondents. They are very important obligations in relation to their respondents. They are very important participants in this whole business. The statistician concerned must not be incapable of creating in them this kind of human feeling.

4. STATISTICIAN'S ETHICAL PROBLEMS

For a public, private or scientific survey the statistician has to mainly carry out dealing with (i) the client who hires him, (ii) subordinate statistical staff for assistance in organizing a survey, (iii) the respondents as subjects in an inquiry. So we should consider his ethical problems with respect to clients, subordinate staff, and respondents separately.

4.1 His Clients

Not all the clients of a statistician use his services for some impartial motive. Sometimes, he is faced with clients who want to do poorly by exploiting their statistician, getting his sanction or even forcing him to project the prefabricated conclusions suiting their needs. When a client comes to a physician for treatment, his attitude is to cooperate, otherwise, he knows his chances of getting well remain obscure. But with a statistician this equation could turn to be different. The client of a statistician may wish to maintain certain convictions or theories by cooking up data with the aid of his statistician's connivance, participation or sanction as his involvement is liable to give the minimal chance to others of catching lies. He may make unreasonable requests or exercise on him an improper pressure or influence to prevent certain features of an inquiry to serve his special interests. This is in fact a very difficult situation for the statistician, and it is here that he has to stay clear or comply with and bring disgrace to his profession. The situation as such directly tests his normal courage. He has to either submit, or use diplomacy to survive or leave his job. Remember, the client could be a government too. So , I will avoid any discussion on this point because of its sensitive nature. But the misfortune is the statistician is made to wear this ugly coat of statistical responsibility. Writing in a leading American journal, a statistician says: " I became aware of this early in my medical consulting career when in a cooperative venture to organize some data for presentation in a legal case a physician suggested calculating the average survival time of a group of cancer patients using the data from.....". Not only this, the statistician may also get threats from those whose interests are exposed to risks because of his discoveries. In the same journal, another statistician narrates: "When our quantitative bio-statistical epidemiological studies on the hazards of diagnostic medical X-rays hit the headlines, I got a call from an irate Rochester Radiologist. He complained bitterly that our findings had reduced the business of radiologists by 40%. He then told me he was calling me up before a medical ethics committee that would take away my M.D. He was disappointed when he came to learn that I didn't have one."

The misuse of a statistician is an irritable offense for which the responsibility anyway lies on both, but the main culprit is the statistician who submits and behaves immorally or even criminally. It is sad that all professions even the noblest ones, suffer from this disease.

4.2 His Field Staff

In undertaking public or private surveys of moderate or big size, a statistician has to depend a lot on the field staff for collection of data. Under his control, advice or guidance this staff is to grapple with the difficulties awaiting them in the information collection process. The statistical conduct of these interviews or enumerators is important in achieving and preserving the purity of the initial information. Their job is hard indeed which consists in frequent traveling devoid of any consideration for the type of season, hot or cold, dry or rainy, searching for and knocking at the doors of the persons selected, explaining the purpose of their visit and drawing gently the correct information. They are the first to be truth seekers. Generally, they are not qualified enough to appreciate the comparative significance of numbers in relation to statistical analysis. For them the inquiry may mean nothing but numbers, a mess of numbers. Even when they do not want to be dishonest; they could make certain mistakes in using their common sense in abnormal situations. As long as they do not commit these errors deliberately or carelessly, there is nothing unethical about it no matter how bad the inquiry's objectives are hit; we cannot forget the maxim, in moral philosophy, "Error destroys action", and so a mission. Sometimes the dishonesty of an enumerator may be due to some kinds of fear and there he may be prone to inventing figures or display carelessness. Once I was asked a question by a statistical investigator in a West African country, "What would you do", Sir," If, like me, you expect to pass a tortuous night in a village where you know the cannibals also dwell, and who may crave to perform some rituals on your blood." In another African country, I happened to meet a field reporter who was discovered to have reported the measurements of sample fields from the number of paces that his horse was making through the fields to avoid snake biting.

Some enumerators slink out is doing hard work, or exploit their simple respondents for their selfish motives. Instead of creating a friendly atmosphere and putting their respondents at ease they may attempt to frighten them or even engage in temporary romance with opposite sexes. In several areas, the people in developing countries are generally ignorant, and an enumerator can force his respondents into submission by posing as a special agent of ruling government. His exploitation may range from securing food to anything including adultery. In latter situation, an enumerator could lose not only a limb but life too; incidents of this type have come to our notice. Anyway, the effects of such an undesirable behaviour of enumerators become manifest in the results of the survey. A strict vigilance of the statistician incharge is essential during collection of basic data. When the concepts or definitions used in a survey are complex, the enumerators' unethical attitude is also attributable to their incompetence and ignorance. Not only that the staff ought to know the relevant meanings behind the figures, the statistician must acquaint them with the real value, usefulness and importance of his statistical inquiry. This serves a great motivating force in reminding them of their genuine responsibilities. A feeling is developing in the Western countries that the statistician should indoctrinate his field and other staff with some sort of ethical code in order to minimize the possibility of their falling susceptible to unwelcome temptations detrimental to the inquiry. By example as well as by formal or informal training he should instill in them the principles of such a code.

4.3 His Respondents

Other than his field staff, fact-finding statistician has to depend a lot on the respondents selected in his statistical project. Their cooperation is also a major factor in improving its accuracy. The problems confronted in data collection and analysis could swell enormously to a formidable extent when the survey includes respondents who for one or other reason cannot give satisfactory information, or happen to be obstinately erroneous, tricky and misleading, or do not wish to cooperate simply. The number of such respondents may not be

reasonably large but they are not only an unpleasant source of wasting already limited time of the field staff, their responses are liable to provoke changes in the use of selected statistical techniques. Why should such a respondent behave like that? Is it just his nature, or are there some genuine reasons too for an abnormal attitude? Is he too, much conscious of his right to be let alone for maintaining and preserving his privacy? Experience shows that this kind of behaviour as much to do with the way he is approached for information. He may have an inflated image or prestige, and wishes it to go on. He may have a fear that the release of true information could harm his interests. He may be scared of being blackmailed too. 'Why me in a sample? is often a puzzling question in his mind - a very common feeling among the respondents. He may pose this question to the interviewer to calm his fears, but if he remains unsatisfied, naturally he might not take any chance in disclosing the truth. The unwillingness on the part of the respondents may also be due to inconvenience that they are subjected during interviews, or experimentation in medical surveys to some sort of risk too.

In general, the respondents have a tendency to remain suspicious with respect to possible unwarranted disclosure of information about them. What guarantee, they ask, do they have against the misuse of their information. It is only the verbal assurance, desperate but solemn, given to them by a statistician and his staff. Certainly the purpose of a statistical inquiry is not to misuse such information and make a blatant invasion of their privacy.

With the development of informational technology as being made possible by the electronic computers, the threat to the privacy of information about individuals or companies is expected to increase. When it comes to ethics, "There are certain acts which when performed on similar occasions have consequences more than times as great as those resulting from one performance."

5. Possible Remedial Measures

In order to enhance the efficacy of decisions there is an urgent need to promote, or even arouse a mass awareness about the importance

of statistical information in the community - a responsibility that normally devolves on the national statistical associations. To achieve this purpose partially, the frequency of popular lectures / seminars / consultancy in applied statistics ought to be increased. A larger emphasis on applications in the statistics courses offered by the teaching institutions would also contribute to this cause.

Perhaps, it is time that the central and provincial statistical offices and statistics department of educational institutions should collaborate to evolve for practicing statisticians a framework of ethical norms enunciating their responsibilities to the clients and respondents.

Let the students be formally acquainted with the statistical ethics for their future obligations to the society before they leave their educational institutions with degrees in Statistics.

The above measures can be useful in significantly improving the quality of statistical information; respectfully upholding public confidence in the wise use of statistical data; and finally in elevating a statistician's integrity in the community.