Some Reflections on Professional Ethics Guidelines in Statistics

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Abstract

The ASA's movement toward certification and the age of the current ethical guidelines raise issues about what ethical standards ASA should promulgate and how and whether it might enforce them. Among the concerns are how guidelines and certification might frame scientific questions for practitioners, possibly limiting their ability to take novel circumstances into account; the possibility that mediocre, conventional certified practitioners would use certification standards to stifle innovation by non-certified practitioners; and the liabilities ASA might incur. Also, certification attests to capability but gives little guidance about how well work was actually done. Teaching the profession's clients and employers how to evaluate statistical work would be a useful contribution by the profession to many of the concerns certification and guidelines are intended to address. These and other issues call for further discussion.

Background

The current ethical guidelines are more than ten years old. Many new issues have arisen, such as protection of privacy and confidentiality as computer search and inference methods become more powerful, and the evolving laws concerning intellectual property rights and protections. It is timely to reopen the profession's discussions about ethics.

In addition, ASA is now moving toward a certification program. Most such programs include a required commitment to the profession's ethical standards, which is another reason to define those standards carefully and comprehensively. When standards are included in a certification regime, decertification is often a penalty for violating those standards. What have been voluntary guidelines can therefore become compulsory, at least to some degree. This reopens the question of the balance between ethical guidelines that set forth what one ought to do versus more strictly enforced but less demanding statements of what one must do.

Some Issues

Many scientific and technical societies have some form of ethical guidelines. These vary in terms of comprehensiveness, the level of behavior set forth, and the mechanisms for dealing with perceived violations. The full scope of these issues is well beyond the current presentation. I do want to point out a few aspects, however, that deserve more attention than they have received.

Certification is a way of helping clients and employers understand who is qualified to practice our profession. It helps to eliminate malpractice by people who do not know what they need to know to carry out their tasks. However, it can also become a blunt instrument wielded by the mediocre and unimaginative to stifle well-qualified practitioners with unorthodox approaches. Guidelines, if enforced, can pose the same problem. We should be particularly sensitive to prescriptions about what methods are appropriate to certain problems, lest the guidelines become an obstacle to innovation.

A similar issue is framing, especially in the context of certification. We can pose questions about how to tackle some kinds of tasks in a way that implies a limited set of "correct" methods and may thus obscure some important issues. We need to avoid doing this, as much as possible.

ASA'a approach to date has been to develop and promulgate guidelines, not standards. If the guidelines evolve into more rigid form, with enforcement, either because of certification or for other reasons, questions about how to enforce become important. ASA will need to consider how much effort, and by whom, would be required, and how that will be financed. Legal liabilities could also arise, as people found in violation of the profession's ethical standards might pursue legal remedies to overturn the decision. Clients or employers harmed by a certified practitioner's work might also wish to proceed to seek lawful remedies against ASA for inducing them to rely on the unsatisfactory practitioner. These legal implications, too, raise troubling questions about the resources ASA would be prepared to devote to this area of activity.

Another problem with more rigidly enforced standards is a paradoxical one. Standards that carry a specified penalty often have less effect than more vague requirements, as stating the penalty causes many people do turn the decision from a moral issue ("We just don't want to be seen as doing that, many people think it's wrong") into a business question: is it worth the price?

Another Issue and a Suggestion

Perhaps most important, certifying capabilities does not address how well the statistician actually serves his clients and the profession in the situations s/he tackles. Errors in modeling tend to be in the assumptions, not in the correct application of techniques. Therefore, even the practitioner well and properly grounded in the technical aspects of statistical methods can perform badly on a given task or set of tasks. Focusing exclusively on capabilities would do the profession and its clients a disservice.

Accordingly, I suggest that ASA develop a program, perhaps as part of its continuing education offerings as well as the guidelines, to teach clients how to assess how well statisticians they employ are performing. Venues in which to apply this guidance include hiring and performance evaluation of employees, selection and direction of contractors, and appreciation of the strengths and weaknesses of competitor organizations. Some issues a good assessment approach would address include:

- What assumptions are involved in the method you chose?
- What alternative methods did you consider, what assumptions do they require, and on what basis did you choose?
- How available and how good are the data your method requires?
- Are you *sure* you have the problem stated as clearly, accurately and thoroughly as necessary? Have you revised your problem statement since starting the task? If so, what had you learned that motivated the change?
- What have you done or plan to do to familiarize yourself with the problem and its context, and with the subject matter field in which it arises? (Prefer analysts who want to see the problem first-hand – best by immersion in it, if possible.)
- In your experience, how often are revisions of the problem statement required as you learn more about the situation? (A response of "never" should result in instant disqualification.)
- Who else would know about this, and what challenges might they raise? How would you respond to those challenges? (This is best done, if possible, by bringing in strong

challengers as "red team" peer reviewers, rather than simply conjecturing as to what issues they would identify. Even conjecture, however, is better than not even thinking about these subjects.)
• What criteria do you use to decide when a less than certain answer is close enough? ("I always try to get all the way to the provable optimum" should also result in disqualification.)
• If we had more time and resources, what else would you want to know about this problem? (Highest marks here go to the analyst who has done serious, systematic analysis of what conjectural new information, if it appeared, would totally thwart the recommended approach, and of how well we know how likely such an appearance is.)
• How would you assess, over time, how well the adopted approach is working?
• What indications and warnings would you look for that might lead you to reconsider what you recommended?
• How easy is your solution method for others to use?
• How easy is your solution method for others to modify?
• How do you intend to document what you did so that others can use it, adapt it, modify it or take issue with it in the future?

The above list is not exhaustive but should provide a good basis for assessment programs and instruments. It is taken from (Samuelson, 2011); the basic idea can be traced back at least to (Samuelson, 1973). The importance of quantitatively assessing the effect of one's quantitative methods, and the infrequency with which this is actually done, is discussed at some length in (Hubbard, 2009) and (Hubbard and Samuelson, 2009).

Conclusions

Changing circumstances and the ASA's movement toward a certification program make it important to reassess ASA's ethical guidelines. This will need to be a lengthy and wide-ranging discussion. This discussion will have to include issues of voluntary versus compulsory, how to respond to alleged violations, and how to educate clients and employers about the guidelines and their effect. Teaching clients and employers how to assess the quality of statistical work performed for them would add considerable value to what guidelines and certification provide.

References

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