TEACHING OF STATISTICS IN THE HEALTH SCIENCES

Section of the American Statistical Association

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Report to the Section

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1992 Section Chair

Almost two years since the first steps were taken to implement the new ASA Constitution, Teaching Statistics in the Health Sciences is now fully organized as a Section of ASA, with a revised Charter, governance structure and, as all other ASA Sections, with reduced membership and altered responsibilities. The reorganization of ASA has increased our autonomy, status, and independent budgetary control, and created an organizational environment designed to assist and speed initiatives to serve the Section's aims. We are now challenged to grasp the opportunity and use our Section as a more active vehicle for the advancement of statistical education in the health sciences. This is, then, an especially worthwhile time to raise fundamental questions about our Section, to carefully appraise our ambitions and prospects. Dr. Grosof's accompanying article serves this purpose, addressing from first principles the question of whether our Section is needed. Here, I'll try to review some aspects of the Section's functioning and activities, and comment on needs and possible future directions.

Under the revised Charter, the Section is run by an Executive Committee consisting of five elected and two appointed officers: the Past-Chair (currently Dave Hosmer), Chair (myself) and Chair-Elect (Robert Elston), the Secretary/Treasurer (Mike Costanza), Council of Sections Representative (Beth Dawson-Saunders), Publications Officer, and Program Chair. I'm pleased that Steve Verhulst, who has ably served as *Newsletter* Editor since 1987, has accepted appointment as Publications Officer, and that Stan Azen will serve as 1993 Program Chair, beginning on his return from sabbatical in August. Until then I will cover for Stan and can accept suggestions for him.

With the institution of dues, Section membership has dropped from roughly 2,000 to 700, consistent with drops experienced by most other ASA Sections. Our paying membership now includes teachers in a wide variety of academic health professional programs and in many graduate Statistics and Biostatistics programs, as well as corporate and government biostatisticians. We have members from 35 foreign countries, including some of the world's most prominent theoreticians. We share a commitment to increasing the influence of our discipline in the health sciences, and a sense of common interests sufficient for the payment of modest annual dues. Most of our members also pay dues to other Sections, such as Biometrics and Statistical Education.

But, under ASA's new organizational structure, monetary dues and shared interests are only a part of a Section affiliation. Sections are directly responsible for using Section dues wisely to achieve our mutual aims. This can be done by providing services to the members, or through outreach activities which most members support. The catch is that the basic source of such services and activities must, of course, be ourselves. The new organizational structure assumes that Section memberships will be aggressive, and produce active leadership to develop and run new services and programs. If not, members will vote with their dollars, and some Sections will gradually whither.

What are this Section's current activities? Major continuing activities are, quite simply, our programs at the Joint Statistical Meetings, and this *Newsletter*. The Boston meetings (see pgs. 3-4) will include many sessions addressing our interests, spaced throughout Monday-Thursday. We have organized two Invited Paper Sessions and three Roundtable Luncheons of which we are primary sponsor, and will co-sponsor eight other technical sessions and three Roundtable Luncheons. On the other hand, our Section will have no Contributed Paper Sessions, due to a lack of submissions. From conversations with members, it appears that few realize that our Section can receive Contributed Papers, and that many neglect the possibility that teaching innovations, experiences, or useful tools they may have developed, may be appropriate subjects for such formal presentations. Thus, we are failing to make full use of the Joint Statistical Meetings as a medium of communication.

This *Newsletter* has been highly-valued by our membership, as expressed at recent Business Meetings and in

a membership survey conducted two years ago. But each of these Business Meetings was poorly attended, and the membership survey elicited a very low response rate. Interest in the *Newsletter,* as measured by submissions to it, has been progressively declining in recent years, despite efforts of the Editor to solicit contributions. Until recently the *Newsletter* has been the only available forum for communication of pertinent announcements and information among us. However, the Section now can make use, at no charge, of a full page per issue of *Amstat News* for such communications. Section resources, coupled with the availability of *Amstat News* for announcements, would allow publication of a substantially expanded and enhanced *Newsletter* if sufficient worthwhile material was available. Thus, we are failing to make full use of the *Newsletter* as a medium of communication.

Among suggestions for making the *Newsletter* more valuable are: i) planning single-topic issues devoted to major aspects of teaching philosophy or practice; ii) substantial expansion of current Book Review activity, and extension to include reviews of computer software or other technological aids designed for or otherwise useful in teaching; iii) publishing statistically-oriented jokes or other humor that can be helpful in teaching situations we encounter; iv) soliciting "literature reviews" of teaching resources available in a particular area; v) publishing a forum of letters solicited on a specified question of interest, e.g. usefulness of a particular teaching technique, making a case for biostatistical teaching time to colleagues and administrators. Undoubtedly, many of you have ideas to help us serve you better, or potential contributions. Make them known to us.

What else are we involved in? The organizers of our 1992 Invited Paper Sessions are interested in distributing expanded versions of materials from their sessions to a wider audience than purchasers of ASA *Proceedings*. At present, we anticipate publishing our papers in a joint *Proceedings* volume with the Stat. Ed. and Stat. Consulting Ed. Sections, but also exploring wider distribution in another format. The Biopharmaceutical Section wishes to influence curricula in statistical education, perceiving that many of the issues and skills that are most scientifically important in that area of biostatistical application are inadequately addressed in current academic training. They have offered our Section a seat on their Committee to consider possible initiatives. I have appointed Mike Free, and am grateful for his willingness to serve. The ASA Committee on National and International Standards has recently written to suggest the following: i) that the Section appoint a representative to the Committee; ii) that the Section form a Committee on Standards; and iii) that the Section contribute financial support for the Committee. These possibilities will be evaluated after more information is obtained on the activities of the Committee. The Section Publications Officer actively advises ASA on selection of books for inclusion in the ASA Discount Book Program, based on the expected interests of our members.

In what directions should services be expanded in the future? The most obvious is developing mechanisms for resource sharing, whether the mechanisms of exchange be a mail clearinghouse or one or more computer networks. Resources might include lecture outlines, homework, review or examination materials, subject-specific reviews or simply compilations of teaching resources, suggested short student readings on particular topics, or software. Any such service would obviously depend on a substantial start-up effort by committed volunteers, a level of funding support unknown at this time, and enough membership interest to generate a critical mass of materials. It has been suggested that one way to make such a clearinghouse work would be to require a contribution of material as an "admission fee" to obtain access. Another possible service is to provide short courses and/or teaching workshops in areas of interest to the members; it is less immediately obvious what short course/workshop needs we should attempt to fill for our membership, overlapping as it is with the Biometrics and Statistical Education Sections.

Clearly, only projects which stimulate enthusiastic participation by substantial subgroups of the membership will work. Only you, the members, are in the best position to determine what projects are genuinely viable. Your Executive Committee is open to suggestions, and there has never been a better time in the history of this group to take initiative and give effort to a worthwhile activity. As the year goes on, we may come to you, through this forum or as individuals, with specific possibilities and/or requests for help. Consider giving time to the Section, to help us realize our potential. Let us know your ideas, by phone, mail, e-mail or at the Business Meeting in August (we have been assured by ASA that this will not conflict in the future with meetings of Biometrics or Stat. Ed). My ambition, as 1992 Chair, is to identify areas to move in, and individuals with enthusiasm, who can begin developing the expanded level of activities which this Section needs to achieve its potential for us. The extent to which you come forward in this effort will, in large part, answer Dr. Grosof's question of whether our Section should exist.

ANNOUNCEMENT

The ASA Council of Chapters wants to organize a session at the 1993 Joint Statistical Meetings, consisting of case studies of applications of Statistics which have had major impact. Vicki Hertzberg has written to all Sections requesting suggestions of individuals or groups who might have such a case study to present. She may be contacted at the Division of Biostatistics, University of Cincinnati, Cincinnati, OH 45267-0183, (513) 558-0100, FAX (513) 558-1756, Internet HERTZBER @ UCBEH.SAN.UC.EDU, Bitnet HERTZBER @ UCBEH, by May 1.

Feature Article

Santayana Was Right

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"Those who cannot remember the past
are condemned to repeat it."
George Santayana

I have been asking myself (and others): what defines or characterizes the problems and issues that members of this Section can best address through our own Section, rather than in common with members of other sections such as Statistical Education, or Statistical Consulting Education, or Biometrics? It has been helpful for me to enumerate some of the diverse audiences and settings in which we may be carrying out the tasks implied by the section label. (Specifically omitted is teaching biostatistics in an undergraduate or graduate program leading to a minor, major or advanced degree in biostatistics, as this area seems to be covered by some other umbrella.)

1. Teaching more-or-less standard introductory applied statistics courses to pre-professional students in nursing or medical technology programs. The students are often math-deficient; the setting is likely to be non-traditional, i.e. a 2-year college or a single-purpose minority and/or over 25, with considerable life experience. In what way does the health sciences focus of these courses make the problems of instruction and interaction different from those which arise with comparable audiences and settings but other applications? Doesn't the Statistical Education Section address these questions? If not, should we not collaborate with members of that section who are concerned with optimizing the effectiveness of these kinds of courses?

2. Teaching mini-courses (typically 15 contact hours) to medical students. Not only is there the need to select the most useful (read: important) 15 hours of information from a very large array of topics, to arrange the material meaningfully and in a pedagogically valid fashion, but we are challenged to persuade students and basic science colleagues that modern medicine demands a minimum of statistical literacy. The audience may arrive with a hostile attitude (why is this science? I hate math!) and the cynically utilitarian view that a <u>really</u> valuable subject would have been assigned more time in the curriculum. Do the designers of a mini-course for, say, an industrial setting have anything to tell us? Why don't we collaborate with them? What about those who teach statistics to engineers, business students and so forth -- are the arguments we use to justify attention to statistics unique to the Health Sciences?

3. Teaching PGY's (residents, fellows) and other clinicians, usually in a hospital or other institutional setting, perhaps through the mechanism of a journal seminar. The emphasis is on the development of critical judgment of published research and/or skills in design, and awareness of related analytic options; teaching materials consist in large part of reports in pertinent clinical fields. The instructor must compete, for the time and attention of participants, with a variety of other activities and authorities generally perceived as more legitimate claimants because they have long-standing precedence as components of medical training. There may be an unspoken attitude of "if this were really worth knowing I would have learned it in medical school"; chiefs of service may give verbal assent to the value of the course but ignore the question of non-participation. Again, are these problems unique? Are there general strategies available to help individuals resolve conflicts between two structures of authority? What's in the literature on in-service courses that might help us develop better approaches? In-service courses, whether or not they lead to advanced credentials, are very typically regarded as an intrusion or as an imposition by "outsiders", resisted as demeaning even while their substance is acknowledged as useful. Perhaps this Section can take the lead in encouraging a sort of meta-analysis of Statistical Education at this level.

4. Teaching through the consulting relationship. Statisticians act as consultants in diverse settings and a variety of schedules. "In-house", "one-shot" or -- in effect -- on a retainer basis, part of every consultation is the education of the client (and the consultant!) in new techniques, new ways of formulating problems, and new interpretations of patterns or associations. Instruction may be explicit, in the form of lectures, or insidious, conveyed through responsive discussion of the clients' concerns. In the past dozen years, the literature on issues peculiar or pertinent to statistical consulting has grown very rapidly. While settings (HMO's, hospitals, welfare service agencies, pharmaceutical companies) and subject matter (DBM for patient records, QA, medical and psychological variables, health care delivery, health and nutrition attitudes) may be distinctive, the general themes of helping clients feel at ease with new information and of maintaining one's own professional status are universal.

Implicit in each of the foregoing is the question: are the problems of Teaching Statistics in the Health Sciences so different from those of teaching Statistics in other contexts that a separate section to address them is appropriate? My answer is quite simple: <u>I don't know</u>! What I DO know after nearly 40 years of teaching several subjects in many settings to a wide variety of audiences is that all the parties involved in whichever aspect of this enterprise have a lot to share and much to learn from each other, that recognizing a common difficulty in several disguises is a step toward overcoming it, that "we" are like "them" even though "they" are not like "us", so we can learn from someone else's experience, and -- above all -- that reinventing the wheel is expensive, time-consuming and frustrating.

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This newsletter will publish official notices, articles, book reviews, descriptions of research in progress, reviews of research, letters, and announcements judged to be of interest to members of the section. Materials and manuscripts should be submitted to:

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