American Statistical Association (ASA) Endorsement of the Mathematical Association of America (MAA) "Guidelines for Programs and Departments in Undergraduate Mathematical Sciences"

The American Statistical Association (ASA) endorses the Mathematical Association of America (MAA) "Guidelines for Programs and Departments in Undergraduate Mathematical Sciences," approved in August of 2000, and offers this position paper as a complement to them.

The MAA Guidelines carefully define "mathematical sciences" to refer to a collection of mathematics-related disciplines, including statistics (section A, paragraph 6). They note that "mathematical sciences departments frequently offer courses in several disciplines" (section C.1.b) and that "professional expectations vary considerably among the mathematical sciences disciplines" (section C.8.f). The Guidelines invite professional societies to develop position papers to speak to the needs of mathematical sciences departments related to their discipline. This document constitutes the position paper of the ASA.

The ASA applauds the MAA Guidelines' positions (C.1.b) that:

- "Ideally, a course should be taught by a faculty member with a graduate degree in the discipline of the course."
- "The department's curricular needs should be a major factor in departmental hiring decisions."
- "The number of faculty with expertise in a mathematical sciences discipline should reflect the department's courses and enrollments in that discipline."

The ASA strongly supports the position that mathematics and statistics are separate disciplines and that statistics courses should be taught by those trained in the subject. To assist mathematical sciences departments implement these policies, the ASA makes the following recommendations concerning hiring, support, and evaluation of statistics faculty members.

Hiring: Mathematical sciences departments in which statistics courses are taught should hire faculty with graduate degrees in statistics. These departments are encouraged to advertise in publications that statisticians are likely to read, such as the ASA newsletter *Amstat News*. Departments that have no statistics faculty members are also encouraged to solicit input on the hiring process from statisticians at nearby institutions or from the ASA. The SIGMAA on Statistics Education and the "isolated statisticians" network within ASA provide means of reaching statisticians who teach in or are interested in teaching in mathematics departments. Making direct contact with graduate programs in departments of statistics is another effective way to reach statisticians who want to teach statistics; the ASA maintains such a list on its web page.

Support: Once a mathematical sciences department has successfully hired statistics faculty, it should provide sufficient resources and mentoring to enable them to succeed in their teaching and professional development. Some specific forms of support should include:

- computer hardware, software, and technical support. Efficient computing tools are essential for statistical research, consulting, and teaching. Generic packages such as Excel are not sufficient even for the teaching of statistics, let alone for research and consulting.
- development funds for travel to conferences and workshops. While these funds are important for all new faculty members, they can be especially important for statisticians who are housed in a department of non-statisticians. These faculty members have a particular need for travel to conferences and workshops in order to meet with collaborators and gain new ideas about the teaching of statistics.
- funds for library purchases in statistics.

If a statistician is expected to provide consulting services to colleagues and students throughout the institution -- which is often expected of statisticians working in academia -- then the institution should make reassigned/released time available for that purpose. Institutions are encouraged to include consulting as part of the responsibilities of a statistician. Working with data is intrinsic to a statistician's work and is invaluable as a source of teaching examples and research problems, while providing a valuable service to the consultees. Consulting often involves providing statistical support for researchers from across the campus who need assistance planning studies and analyzing the subsequent data; such support is often essential for the article to be published. A conscientious and engaged statistician is likely to be involved in consulting for students and faculty even if it is not formally part of the job; but it is better to make this an explicit part of the job rather than an unrecognized extra burden.

Mentoring junior faculty members is an essential form of support. The MAA Guidelines (section C.8.f) propose that "if the department has only one or two faculty members in a discipline, it should seek outside persons to serve as advisors for departments and mentors for these isolated faculty members early in their careers." The ASA fully endorses this suggestion and offers its help in identifying statisticians who can serve as advisors and mentors. The MAA's Project NExT has proven to be a very helpful form of support for newly hired statisticians in mathematics departments.

Evaluation: When evaluating the teaching of statisticians, in addition to using traditional measures, departments with only one statistician are advised to gain input from statisticians at nearby institutions or from the ASA. Since the teaching of statistics differs from that of mathematics in several ways, this input can help the department to assess whether the statistician's teaching is consistent with expectations and recommendations in the field.

Mathematical sciences departments should also recognize the value of statistical consulting as a legitimate and important form of scholarship and professional development. This can involve:

- consulting on projects that may lead to joint authorship on peer-reviewed publications
- consulting on scholarly projects even if joint authorship is not attained
- consulting on student research projects

- consulting on commercial projects that may involve proprietary information that precludes peer-reviewed publication

The first of these can be evaluated by the usual peer-reviewed means, although the department should recognize that the journal may be in the applied discipline rather than in statistics. Such consulting would not likely result in sole- or first-authorship but can nevertheless be very valuable. The second and third of these can be assessed through testimony of the scholars and faculty members for whom the statistician performed the consulting. The fourth of these can be evaluated through testimony of the client. It is vitally important for mathematical sciences departments to understand the role and importance of consulting in the work and ongoing professional development of a statistician. (See C.8.e.)

Curriculum: The MAA Guidelines also speak to curricular issues. They state (section D.1.g) that "in cases where a department offers a course or courses in a particular discipline, but does not have a faculty member with expertise in that discipline, the department should take special care to consult the curricular guidelines of the relevant professional society in that discipline." The ASA is again happy and eager to provide assistance in this area. Two documents that may prove to be helpful are:

- Curriculum recommendations for undergraduate programs in statistics, arising out of the ASA's Undergraduate Statistics Education Initiative (USEI), available from the ASA's web site http://www.amstat.org/education/curriculumguidelines.cfm.
- Recommendations for teaching introductory courses in statistics, developed by the ASA/MAA Joint Committee on Undergraduate Statistics and described in Cobb's article "Teaching Statistics" in the MAA Notes publication *Heeding the Call for Change*.

The primary ASA group that can offer assistance to mathematical sciences departments with these issues is the Section on Statistical Education. This group works closely with the ASA/MAA Joint Committee on Undergraduate Statistics, with the SIGMAA on Statistics Education, and with the "Isolated Statisticians" network. Contact information can be found from the ASA's web site www.amstat.org.