Department of Statistics Self-Study Report

1. Mission of the Statistics Department

The role of the Department of Statistics at the University of Wisconsin, Madison, is to create new knowledge regarding statistical theory and methods through innovative research activities, to teach the theory and practice of statistical methods, and to provide consulting aid to and do collaborative work with other researchers. The research component is aimed at improvement of current statistical theory and methods as well as development of new techniques for novel applications of statistics to meet the growing needs of society. The teaching component is geared toward the training of our graduate students to become professional statisticians as well as the imparting of information on statistical theory and the practice of statistical methods to students in many disciplines. Through the high level of activity and excellence in the research programs of its faculty and the excellence in quality and diversity of its academic programs, the Statistics Department has attained and maintained a reputation in the profession as being one of the top ranking departments in the nation. The mission of the department is geared toward the three-fold objective of:

i. generation of new knowledge in the field by means of scholarly research activities in a wide and diverse range of areas, including both statistical theory and applications,

ii. dissemination of knowledge through high quality and innovative instructional programs at both the undergraduate and graduate levels, with an eye towards continual adaptation of instructional efforts to accommodate the ever-changing demands of the academic community and society,

iii. serving society directly through interactive and collaborative research efforts in such diverse areas as agricultural and life sciences, medical science, business, engineering, environmental monitoring, and social sciences.

Instructional and Degree Programs. – The Department of Statistics offers a broad range of degree programs aimed at career development in statistics and in several related fields where statistics is heavily applied. The degree programs are:

B.S., B.A. with major in Statistics
B.S., B.A. with joint major in Statistics and Computer Sciences
M.S. in Statistics
M.S. in Statistics with Emphasis in Biostatistics
M.S. in Statistics with Emphasis in Quality Improvement
M.S. in Biometry (joint with the College of Agricultural and Life Sciences)
Ph.D. in Statistics
Ph.D. in Statistics with Emphasis in Biostatistics

as well as a Minor in Statistics for Ph.D. students from programs in other departments.

To meet the requirements of these degree programs and also to serve the needs of students in a variety of other degree programs who require knowledge of statistical concepts and methods, a wide array of courses are offered at all levels of undergraduate and graduate education. The course offerings accommodate a great deal of diversity in their emphases from basic elementary statistical concepts, to fundamental and advanced mathematical theory, to effective blends of theory and applications, to substantive applications in data analysis and computing. The courses are mutually reinforcing and they provide an enormous flexibility in career options for students.
Some basic knowledge of statistics, included in what is often referred to as quantitative reasoning, is now recognized to be an integral part of a general college education. Also, additional exposure to statistics and familiarity with special techniques of data analysis are required in the academic programs of many fields of the natural and social sciences. Hence, as noted, the comprehensive range of courses offered by the department at the undergraduate and introductory graduate levels tends to provide service to the undergraduate and graduate degree programs of other departments and to the breadth and quantitative reasoning requirements for a college degree. The demands for more specialized courses in statistics having particular interests or areas of applications, however, seem always to be increasing. Accommodating these additional demands in our academic program represents a challenge for the future to be met by Statistics. A complete list of courses offered during the past five years is given in Appendix B.1.

Maintaining a high quality of instruction is of paramount importance in our departmental mission. Senior faculty and junior faculty participate in both undergraduate and graduate teaching on an equal basis. Moreover, the lecture sections are always taught by faculty (or academic staff on occasion) and never by graduate teaching assistants, even at the elementary level. Three of our more senior faculty have won university teaching awards for their excellence in teaching introductory level statistics courses.

**Research Mission.** – The research of faculty members in the department is oriented towards examination and improvement of existing statistical methods, discovery and development of new and useful techniques, examination of theoretical properties and practical aspects of these methods and techniques, and application of existing and new statistical techniques to novel problems in various settings. Research is closely integrated into the instructional program, especially at the graduate level, to ensure that new ideas and developments are presented and discussed, and are constantly re-evaluated leading to improvements.

Faculty with full-time appointments in Statistics combine with those having joint appointments to form a cohesive group conducting research on all frontiers – basic theory, general methodology, methods designed for specific fields of application, and collaborative research to support scientific studies in various fields.

A great deal of the research of our faculty takes place in concert with our graduate students. We provide excellent training for our graduate students as statisticians for work in academia, industry, and government. Past graduates are following a diverse range of careers throughout the world. We are committed to maintaining and improving the quality of our strong graduate programs.

**Statistical Consulting and Collaborative Activities.** – The department cooperates with many other units on campus on a wide range of levels. This cooperation takes the form of dedicated instruction, statistical consulting, and collaborative research. The cooperation and collaborative activities are especially strong between Statistics and the Medical School and the College of Agricultural and Life Sciences (CALS), through the cross-disciplinary connections and programs established by our faculty holding joint appointments in the Medical School or CALS. This interdisciplinary aspect of our work in Statistics is a very important and distinctive feature of the department and represents one of its great strengths.

### 2. The Faculty and Their Research

The Statistics Department consists of 21 faculty members, of which 12 have 100% appointments in the department, 4 have joint appointments with the Medical School, 3 have joint appointments with the College of Agricultural and Life Sciences, 1 has a joint appointment with the Business
School, and 1 has a joint appointment with the Mathematics Department. The faculty engage in high quality research activities within a vast range of areas of statistical interests. Our faculty, their affiliations, and some of their research interests are listed in Appendix A.

Generally, most faculty in the department are involved in research in both statistical theory and methodology and applications to important real-world problems. This combination of theory and practice in the research efforts of our faculty, as well as in our instructional programs, constitutes a long and well-established strength of our department, which is highly regarded in the profession especially in this respect. In particular, because of the nature of the position of the joint appointees, the activities of these faculty members necessarily include collaborative research with scientists in subject-matter areas of medicine and agriculture, as well as research in statistical theory and methods of general interest.

As indicators of the quality and reputation of our faculty, 12 members have received the honor of selection as Fellows of the American Statistical Association (ASA) or the Institute of Mathematical Statistics (IMS) or both. Several of our faculty serve as Associate Editors for one or more major statistics journals, and one is the Editor of a journal. Many faculty provide service to the American Statistical Association, the Institute of Mathematical Statistics, the Biometric Society, and other professional societies as office holders, program organizers, and the like. Thirteen of our faculty have authored or co-authored a total of 23 textbooks both at the introductory statistics levels and at advanced graduate levels on specialized subject matter for which the authors are internationally recognized experts.

The sustained quality and reputation of the research of our faculty has enabled them to attract very substantial levels of extramural funding on research grants over the years from federal agencies such as NSF, NSA, NASA, NIH, NOAA, USDA, as well as from private sources. In addition, faculty jointly appointed with the Medical School and CALS are involved in research projects with extramural funding through these schools, both in the form of their own research grants and also grants of other research scientists in the fields in which the joint appointees in Statistics are involved. In particular, during the past three years, each of our newer faculty holding a joint appointment in the Medical School (Biostatistics) has received a prestigious 5-year FIRST Award from NIH.

Details on editorial board and other service, authorship of textbooks and monographs, recent journal publications, and extramural funding of our faculty over the past five years are presented in Appendix A.

In terms of national rankings, according to information from “Research-Doctorate Programs in the United States,” authored by the National Research Council (1995), our program in statistics was ranked 8th, behind Stanford, UC-Berkeley (Statistics and Biostatistics), Cornell, Chicago, Washington (Seattle), and Harvard. A recent report by Gourman (1996) also gave a ranking of 8th for our graduate program. These recent rankings of 8th do represent a small slippage from rankings of our department in various previous studies, which typically gave us rankings in the range of 3rd to 5th. The reasons for this slight drop in national ranking from previous reports is not entirely clear. There is no doubt that the retirement of Professor George Box from the department in 1992, and earlier resignations of a few prominent researchers such as Jeff Wu, L. J. Wei, and Martin Tanner, in the early 1990s, have had some impact on the department’s national reputation. We are striving to mitigate these effects through strategic hiring of exceptionally talented young faculty over the recent years, and in the near future, but there is necessarily some time lag before their presence can be expected to make its full impact.
3. Undergraduate and Graduate Education

Our courses may be broadly divided into two categories—graduate program courses and service courses. The graduate courses are aimed primarily at students in our MS or PhD program. The service courses consist of all other courses. Note that students in other graduate programs on campus take courses from both of these categories, and, in fact, comprise the majority in some of our service courses. Throughout this discussion, MS (PhD) refers to both the MS (PhD) in Statistics and the MS (PhD) in Statistics with Emphasis in Biostatistics. Detailed descriptions of requirements for the undergraduate major, and for the MS and PhD degrees in Statistics are provided in Appendix B.

**The PhD Program.** – Our PhD program is one of the largest and most highly respected in the United States. As shown in Appendix B (B.7 and B.8), our graduates are placed in good jobs, working as statisticians in positions in academic institutions and industry.

The PhD coursework consists of four required (709, 710, 831, and 998) and seven elective courses. The required courses consist of a two-semester sequence in mathematical statistics (based on measure theory) (709-710), a course in probability theory (831), and a course in statistical consulting (998). The set of required courses has not changed for several years, and we do not anticipate any change soon, although the contents of the courses have undergone modifications to reflect new developments in these core areas of statistics. What has changed more substantially are the courses we offer as the electives. As new areas of research have emerged, we have created courses to explore them, and the syllabi of existing elective courses are continually being updated to reflect advances in knowledge.

Students must pass a PhD Qualifying Exam within their first 3 years to be able to continue in the program. This Exam is based largely on statistical and probability theory material from the required courses 709-710 and 831. Students must also pass the oral PhD Preliminary Exam, and ultimately, their Final Thesis Defense.

**The MS Program.** – Our MS program is a “stand-alone” program—for many years we have been known nationally for graduating highly qualified MS statisticians. Their blend of training in statistical theory and applications provides them with excellent qualifications to serve as practicing statisticians and consultants in industry. There is a strong job market, and, as shown in Appendix B (B.7), our graduates have been very successful at landing jobs.

For the MS degree, students must take four required courses (610, 849, 850, and 998) and 2 or 3 (depending on level) elective courses. The required courses consist of a course in mathematical statistics (610), a two-semester sequence in linear models and design of experiments (849-850), and a statistical consulting course (998). The program typically takes 3 or 4 semesters to finish, and culminates with the completion of the required Statistical Consulting course (998) and the Master’s Examination. The MS Exam is a week-long exam in which students are required to perform analyses of two data sets related to real problems, consult with clients about the problems involved, prepare a written report of their analyses and conclusions, and defend and elaborate on their results in an oral exam before the MS Exam Committee consisting of four faculty members. The required coursework and the MS Exam format provide our students with excellent preparation for becoming professional statisticians, and our Masters Program has been highly successful in training our students to play important roles as statisticians in industry and government.

**Specialized Instructional Programs.** – Subunits exist within the department based on the joint appointments that Statistics has developed with other departments and colleges. The
most notable of these are Biostatistics and Biometry. This structure has resulted in the joint strengthening of Statistics and the other departments through shared programs in teaching and research. Formal academic programs in three specific areas, Biometry, Biostatistics, and Quality and Productivity, have been developed associated with these subunits. These joint programs are strong and will continue to develop and expand. A major issue in the area of joint programs with Statistics will be the ability to respond to growing needs in the face of limited resources.

Biometry – Biometry refers to the application of statistics to problems from agricultural, (non-medical) biological, and environmental sciences. Currently, the biometrics faculty in Statistics consist of three faculty with joint appointments in departments of CALS. In the instructional areas, the biometry group offers a two-semester sequence (571-572) in biometry aimed at graduate students in CALS. The biometry group also takes the leadership role in an MS degree program in Biometry. This program focuses on the application of statistics to agriculture, ecology, and nonmedical biology. Students in the program are required to complete coursework in statistics and the biological sciences, and to write a paper representing an original contribution to biometry. Such students typically are working simultaneously toward a PhD in a biological science in CALS or in L&S.

Biostatistics – Biostatistics refers primarily to the application of statistics to problems from medical science. Currently, the biostatistics faculty in Statistics consist of four faculty with joint appointments in the Department of Biostatistics and Medical Informatics in the Medical School. In the instructional areas, the biostatistics faculty teach an introductory biostatistics course (541) designed for students in medical sciences and pharmacy. The Statistics Department, in collaboration with the Biostatistics Department, offers both an MS and PhD degree program in Statistics with Emphasis in Biostatistics. In addition to satisfying the requirements for an MS or PhD degree in Statistics, students in the programs are required to take two courses in biostatistics exploring topics in clinical trials and epidemiological studies; PhD students are also required to take a course in survival analysis methodology.

Quality and Productivity Improvement – Quality and productivity improvement has been a rapidly growing area during recent years. There have been ongoing collaborations with members of our faculty and faculty in the Business School and the Department of Industrial Engineering for many years. Statistics has one faculty member with a joint appointment in the Business School, but currently no joint appointments with the College of Engineering. A Masters degree program has been created that results in an MS in Statistics with Emphasis in Quality and Productivity Improvement. In this program, students learn the scientific method with emphasis on statistical methods and their use for quality improvement in industrial, service, and government settings. Students in the program are required to complete the same core of courses as in the general MS in Statistics and must also pass the same MS Exam. Additional coursework (e.g., from departments in Engineering or the Business School) related to quality improvement are required.

Service Courses. – Some of these courses serve primarily (and for some, almost exclusively) a specific “customer,” while others attract a number of students from a variety of departments all across campus. The former group consists of Statistics 224 (engineering), Statistics 311–312 (Industrial Engineering), Statistics 313–314 (Actuarial Science), Statistics 424 (engineering), Statistics 541 (the Medical School and Pharmacy), and Statistics 571–572 (CALS). The courses that serve a more varied audience include our first and third largest enrollment courses, Statistics 301 and 201, respectively. These are introductory level courses and are taken by students for a wide variety of purposes. Our more advanced and lower enrollment courses (e.g., 333, 349, 351, 411, 421, 424)
focus on more specialized topics and methodologies within statistics.

For courses that primarily serve a particular customer, we try to maintain open communication with the customer to ensure that their needs are being met.

**Undergraduate Major.** – Our undergraduate major has always been a small program, but our number of graduates has dropped substantially, from 19 in 1992–93 to four each of the last two years. Indications are that the number is on the increase again. We point out that, nationally, statistics is generally viewed as a graduate rather than an undergraduate program. For example, from our last survey (1986–87) of undergraduate programs, we had the most undergraduate degrees with majors in Statistics in the Big Ten—20. Three Big Ten Schools did not have Statistics Departments, one did not respond to our request for information, and the other five reported 12, 10, 4, 4, and 2 graduates majoring in Statistics. Note that our majors enroll in our service courses, and typically, no service course has more than three to five majors in it. Hence, the more advanced service courses essentially have the additional role of elective courses in the requirements for the major.

**Campus General Education.** – Statistics 201 or 301 is used by students across campus to satisfy the statistics requirement in their major, to satisfy general education requirements, and to obtain an introduction to the ideas and methods of statistics. Statistics 301 is used to partially satisfy the BS math requirement in L&S. Statistics 201 or 301 can be used to satisfy the Quantitative Reasoning B requirement. At this time we do not have a QR-A course and are undecided on whether to try to develop one.

Statistics 424 is a writing intensive class. On two occasions, our Honors lecture of Statistics 301 (see below) was a writing intensive class. We hope to develop a Communications-B (Bascom) course and offer it during 1999–2000.

**Honors.** – In Fall 1995, Spring 1997, and Spring 1998, the Department offered an Honors lecture section of Statistics 301. These sections have proven to be popular with Honors students from other departments and we hope to be able to continue to offer an Honors section on an annual basis.

**Assessment.** – During the current academic year we are beginning a formal assessment of our undergraduate and graduate major programs. We anticipate that the information gained will help us to serve our majors better.

**TA training.** – Each Fall we have an extensive program for training new TAs. No person may be hired as a TA without first successfully completing this program. First-time TAs are provided with early feedback on their performance through brief questionnaires given to students during the sixth week of classes. In addition, over the past three or four years, we have initiated a 4-week training program in the summer session, which includes a course in ESL, for new incoming international TAs.

**Overview.** – Figures on total enrollments in our courses over the past five years, numbers of undergraduate majors, numbers of MS and PhD students and degrees granted in Statistics, numbers of graduate students supported under Teaching, Research, and Project Assistantships, and information on employment of our graduates are provided in Appendix B (B.2 – B.8). As a partial summary, the following are some brief comments and discussion concerning certain aspects of this information.

Over the past five years, total enrollments in our courses initially have shown a small decline, with a low point in 1995–96, followed by slight increases. The slightly lower enrollments for 1995–96 might be mainly attributed to the fact that we have been forced to offer fewer lecture sections over the past few years because of faculty shortages. A few specific factors that contribute to the
slightly lower total enrollments in 1995–96 relative to early years include lower than usual numbers in 301, a decrease in 424 enrollments, and a drop in 756, the last mainly as a result of a split of a single larger 756 lecture into two or three smaller sections, all but one taught through the Business School (and thus not included in our enrollment figures). Statistics 301 has shown an increase in enrollment over the past two years (1996–98), however. Enrollment in 500-level courses will now show an increase starting with 1997–98, because of a new large section of 541 created for Phar-D students, with approximately 120 students in Fall 1997. (Total enrollments for 1997–98 are thus increased, and will end up at approximately 3100 based on 64 sections.)

The numbers of graduate students in our programs, and the numbers of MS and PhD degrees granted, has also been fairly steady over the past five years, but currently they are slightly lower than in 1992–93 and 1993–94. We notice that relatively high proportions of females and domestic U.S. students have successfully completed MS degrees in our programs, whereas relatively few in these categories continue to complete PhD degrees. The number of degrees in the different categories is also fairly constant over the five years. Approximately 2/3 of our graduate students are supported by TA, RA, and PA appointments, and the number and types of support are quite constant over the years. Typically, each year about one-half of the support is on Teaching Assistantships and the remaining one-half is on Research and Project Assistantships (a large portion of the RA and PA support, roughly 75%, is generated through Biostatistics and CALS). Finally, we notice that our PhD graduates have obtained jobs that split nearly equally between industry and academia.

4. Interdisciplinary and Collaborative Activities

From its inception, the Statistics Department has pursued the goals of blending statistical theory with practice, striking a good balance, and attaining excellence in both as they reinforce each other. Statistics is largely an interdisciplinary field by nature, being an essential component of virtually all scientific methods and investigations. Continuing developments of fundamental theory and methodology of statistics are inspired by the needs for effective processing and analysis of information in scientific studies, and those in turn lead to improved planning and conduct of experiments, with increased knowledge and better scientific understanding and interpretations of results.

The development of the joint academic programs in biostatistics, biometry, and quality and productivity improvement described in Section 3 constitutes a major response to the importance of this role. Further areas exist which are highly suitable for development of additional joint programs with statistics, and it would be very desirable to pursue these if resources could be made available.

Much of the Statistics Department’s ongoing interdisciplinary activity in research takes place within the framework of these joint programs, primarily in the areas of medical science and agricultural and life sciences that involve the statistics faculty with joint appointments in the Medical School (Biostatistics) or CALS, as discussed in Sections 2 and 3. The biometry group maintains an active consulting facility for researchers in CALS and Veterinary Medicine, assisting between 200 and 300 researchers per year. There are ongoing programs of collaborative research with a wide range of biological scientists, and the biometry faculty are frequently partners with biological faculty on grants. The biostatisticians are actively engaged in consulting and collaborative research throughout the Medical School and also with the Schools of Nursing and Pharmacy. The involvement of the biostatistics faculty is a key ingredient in the research funding of many of the projects in these areas.

Much collaborative work between faculty in our department and other researchers also takes
place in other areas as well. We note some of these interdisciplinary involvements in the following. We have active involvement with the Center for the Mathematical Sciences; the current director of the Center is a member of our faculty. Several members of our department are also members of the Sewall Wright Institute of Quantitative Biology and Evolution. This institute was created informally in 1995 to promote interdisciplinary instruction and research programs in areas of biology, such as animal and plant breeding and genetics, cellular and molecular biology, and ecology, evolution and behavior, that require complex mathematical and statistical modeling, and expertise in computational developments such as genetic algorithms. Statistics is a supporting department of the Engineering Research Center for Plasma-Aided Manufacturing; several of our graduate students have worked with this Center over the past years; some of our graduate students have also been involved in research appointments with other engineering projects and centers. Several of our faculty recently have participated in the Senior Research Fellow Program (sponsored by NSF and ASA) to work with statisticians in government agencies such as the Bureau of the Census and the Bureau of Labor Statistics. One Statistics faculty member has had major participation on the international scene, through long term research grants with NASA, NOAA, and DOE, in the statistical analysis of global atmospheric ozone, temperature, and ultraviolet radiation data for trends associated with human-related chemical releases. Another faculty member has had a long involvement with researchers in Meteorology and Atmospheric Sciences on several NASA grants to study weather modeling and prediction.

We anticipate that these types of interdisciplinary relationships will continue and increase in scope, to include areas such as environmental monitoring projects and business financial studies. As noted, a major factor in our discipline has been and will continue to be the ongoing involvement with scientific researchers in a wide variety of areas of investigation.

5. Organizational Structure and Human Resources

Organizational Structure of Staff and Faculty. – The office staff currently consist of four members, a Departmental Administrator/Supervisor (Program Assistant-2), a Program Assistant-3 staff person, a Graduate Studies Program Assistant-2 staff person, and a Technical Typist Senior, as indicated in the organizational chart shown in Appendix C. The Departmental Administrator/Supervisor, Denise Roder, is new to the department starting in 1997-98. Each office staff has assigned duties according to the departmental administrative structure. The Program Assistant-2 Supervisor position handles all management aspects of the departmental office, serves as the administrative assistant to the department chair, manages and maintains all personnel and payroll files, and coordinates and supervises instructional and research document processing and other clerical duties. The Program Assistant-3 position has a variety of responsibilities for the department. She administers instructional and research computing facilities, coordinates day-to-day operation of the office, is responsible for duties in connection with on-going faculty recruitment and teaching visitors, provides support for Department Administration, Faculty, and Executive Committees, and gives support to instructional aspects of the department. The Graduate Secretary (PA-2) position is responsible for processing of graduate student admissions, and advises students on policies, requirements, and financial aid. She works directly with the Graduate Student Admissions Committee in the department. She also maintains records and files of graduate and undergraduate majors, and serves as the receptionist and gives clerical support to the department.
The Technical Typist Senior position uses the LaTeX formatting language to prepare exams and course materials containing statistical terminology, and to produce research manuscripts and technical reports containing complex statistical equations. She also assists the Editor for Statistics and Probability Letters and Associate Editors for other journals, and performs other clerical duties as assigned.

In terms of the faculty, the department is organized with a Chair and an Associate Chair. Many of the academic and student-related matters are routinely handled through a system of about 20 departmental committees, which consist of 1 to 4 faculty members each; some committees also include graduate student members as appropriate. Some of the more notable of these committees include: Faculty Hiring; TA, RA, and PA Awards & Assignments; Graduate Student Admissions; Curriculum & Degree Requirements; M.S. Exam; Ph.D. Exam; and Computing. Members of the office staff provide essential support to the faculty for the regular operation of many of these committees. There is no standing Departmental Planning Committee; matters pertinent to this are often initiated by the Chair or by individual faculty, and are sometimes examined through the formation of an ad hoc committee on an individual case basis.

The Chair is responsible, ultimately, for all aspects of operation of the department, including the overseeing of performance of the various committees to ensure that their duties are carried out in a smooth and timely manner. Traditionally, in practice, the Chair's duties have tended to be focused more on certain aspects of faculty activities. This includes annual appointment of faculty members to the departmental committees, appointment of short-term teaching staff as lecturers, and especially the review and evaluation of faculty performance. In 1997, on a trial basis, a salary committee, which consisted of the Chair and three additional faculty members, performed the merit exercise instead of the Chair alone, which had been the tradition previously.

The Associate Chair is typically delegated responsibilities related to the instructional component of the department's operations. This has included the selection and scheduling of courses to be offered, the teaching assignments of the regular faculty members, construction of the timetable, monitoring of registration and class enrollments, and various aspects of planning and reporting with regard to graduate teaching assistants budget, assignments and performance. A member of the office staff also provides basic support to the Associate Chair in relation to timetable and registration/enrollment matters.

**Human Resources.** – The dot diagram at the top of the next page, plotted in five-year groupings, shows the age distribution of the faculty in our department. It shows that while our age distribution is relatively flat over a wide range, 5 (out of 12) of our full-time faculty are age 60 or over. We could possibly see 2 or 3 retirements from this group within just a few years. It is essential that we be prepared and are able to initiate, in the very near future, an aggressive hiring plan designed to hire several faculty in statistics over the next few years, so that we can maintain and accelerate the excellence of our research and teaching programs. Otherwise, the quality of the department could suffer if faculty losses due to potential upcoming retirements are not able to be replaced in a quick and timely fashion.
Dot diagram of age distribution of Statistics faculty; open circles represent faculty with joint appointment in Biostatistics or CALS, circles with plus sign represent faculty with joint appointment in Mathematics or Business School, and solid circles represent faculty with full-time appointment in Statistics.

**Faculty Review Procedures.** - As noted above, prior to 1997, the annual review of all faculty for purposes of merit exercise was performed by the Chair alone. Last year, an ad hoc committee was formed to examine alternatives to this procedure. After a few months to study and evaluate the situation, including interviewing each faculty member and past Chairs, a proposal was formulated by the committee to have the merit exercise performed by a salary committee. This was approved by the Executive Committee, and thus last year, on a trial basis, the merit exercise was carried out by a salary committee consisting of the Chair and three other tenured faculty. The Executive Committee is currently evaluating the effectiveness of this procedure.

A schedule of post-tenure reviews for all tenured faculty was set during 1992–1993, which calls for an average of 3 faculty reviews per year. The 5-year cycle of first reviews is being completed this year. The post-tenure reviews are administered through a departmental Post-Tenure Review Procedural Committee, which was created for this purpose to help ensure that these reviews are carried out following appropriate procedures. The process seems to be working smoothly over the past 3 to 4 years.

For (nontenured) Assistant Professors, a mentoring and review committee system has been in place for several years. We have only hired two Assistant Professors since 1992, so there is only limited experience with the system. However, we feel that our department has always been good at providing "informal" mentoring and guidance to our new Assistant Professors, so we anticipate that the system will continue to be very successful. The mentoring and guidance for jointly appointed faculty has always created some additional challenges, but we think the system has been quite effective in these cases also.

**6. Physical and Technical Facilities, Equipment, and Resources**

The Statistics Department occupies portions of Units II and III in the Computer Sciences and Statistics Center (CSSC) at 1210 West Dayton Street. The administrative offices and most of the faculty offices are located in Unit III (4th floor), which was built in 1987. Nearly all of the offices for graduate student teaching, research, and project assistants are located in Unit II (occupying about one-half of the 4th floor of that unit), which was completed in 1972. There is only enough graduate student office space available to house students that have some form of financial assistantship (TA,
RA, PA), which represents about two-thirds of our students. These graduate student offices are typically shared 3 students per office. Overall, offices are of good quality and there is sufficient space for our administrative staff and faculty. Space for graduate students is adequate.

There is limited classroom space in the CSSC building so most of our larger lecture sections and most of our discussion sections meet in other buildings, most commonly Noland and Psychology. This is sometimes inconvenient when there is a need to incorporate computer demonstrations into lectures. We now have high-quality computer projection facilities in Room 1221 CSSC that are shared with the Computer Sciences Department. For other classrooms, we must make do with a portable overhead projector tablet.

Statistics has always made a strong commitment to developing and maintaining state-of-the-art research and instructional computing facilities for its faculty and students. This has been possible through equipment grants from the National Science Foundation, through capital exercise allocations, through the support of the Graduate School, and through individual faculty grant support. We have also been able to rely on the knowledge and expertise of the Computer Sciences Systems Lab to help maintain our computer systems and to help us in the choice and operation of equipment. The Department operates a network of powerful DEC Alpha and Sun workstations and computer servers running the Unix operating system. This allows us to share hardware and software resources, such as laser printers and file storage, effectively. Although statistical research and instruction require a wide array of advanced software, we strive to minimize software expenses by sharing resources and by acting as a test site for software packages. All graduate student offices are equipped with workstations or multi-window graphics terminals. The department recently was the recipient of a campus grant to upgrade its instructional computer lab. This lab now has 24 state-of-the-art workstations running the Solaris (Unix) operating system on Pentium-based microcomputers, all wired into the department's network. Most of the office staff use networked microcomputers, as well. These machines permit access to both the Windows NT operating system as well as Unix. The former is particularly important for access to campus data, while the latter assists in intradepartmental communications.
Appendix A: Information on Faculty Research and Service Activities

Appendix B: Statistics Programs at UW-Madison
   1. Major
   2. Joint Major In Computer Sciences and Statistics
   3. Honors In Major
   4. Courses Description
   5. Master’s Degree
   6. Admission
   7. Courses Description


Appendix B.2: Instructional Sections and Enrollment, by Level

Appendix B.3. Undergraduate Majors and Graduate Degrees Granted in 1992-1997

Appendix B.4: Gender and Nationality of Graduate Students, 1992-1997

Appendix B.5: Number of Graduate Student Assistantships, 1992-1997

Appendix B.6: Number of Semesters for Graduate Students To Complete Master’s and Ph.D Degrees

Appendix B.7: Information on First Jobs of Students Graduating with Master’s and Ph.D Degrees

Appendix B.8: Information on Research and Jobs of Recent Ph.D. Graduates

Appendix C: University of Wisconsin-Madison, Department of Statistics, Organizational Chart