March 22, 1999

To: Statistics Regular Faculty

From: Greg Reinsel

Re: Report of Statistics Department Review Committee

We have just received the report of the Statistics Department Review Committee. A copy is enclosed along with a letter from Dean Certain asking for possible reactions/comments to the report.

My immediate impression from a first quick reading of the report is that the committee has taken a rather critical position towards the department. While some of the concerns raised by the committee have substance, there may be an over-emphasis of discussion on negative aspects by the committee and failure to adequately address positive aspects of the department. I urge each faculty member to read the report carefully as soon as possible. Please provide me with any comments you might have concerning the report, and especially highlight any points that you think I should communicate to the Dean. I will appreciate receiving your comments by March 30, sooner if possible. Please convey your comments to me (and other faculty if you wish) through email, or by other means if it is more convenient. Thank you.

I will also schedule a faculty meeting for Tuesday, March 30, with discussion of the report of the review committee as a main item.
MEMO

To: Statistics Faculty  
From: Greg Reinsel

If you agree in principle, I plan to submit comments to Dean Certain regarding the departmental review committee report. Below is a DRAFT version of some comments for your consideration and any feedback or other thoughts you care to offer. We can have some limited discussion of this particular item, i.e. specific response to the Dean, at Thursday's faculty meeting.

Some came to our harsh but generally

base to move forward
Dean Phillip R. Certain  
Letters & Science  
102 South Hall

Re: Comments on Report of Departmental Review Committee

Dear Dean Certain:

On behalf of the entire faculty and staff of the Department of Statistics, I would like to express my sincere thanks to the departmental review committee members for their detailed and conscientious report on our department. We can imagine the time and efforts that were required to produce such a high quality report, and they are greatly appreciated.

I would like to first emphasize some key points of generally common agreement between the Statistics Department faculty and the review committee report. In each point, I first highlight an idea that, broadly speaking, appears in the report, and then following the asterisk (*) comment or elaborate on this idea.

1) The Statistics faculty maintain a very productive research program, with a strong balance between statistical theory and applications, and the department provides excellent graduate training, both at the Masters and Ph.D. levels.

*We believe that a key to both our past and future successes in these regards is to have an established solid core of full-time faculty in statistics coupled with a substantial number of high-caliber joint appointments with associations in diverse areas across the campus, including the areas of biostatistics, biometry, business, engineering, and the physical and social sciences.

2) Given the desire to maintain such outstanding research and graduate instructional programs in statistics, as well as to extend our support teaching role and research interactions to an even broader range across campus, the small size of the department is very limiting.

*We believe that the Statistics Department must be given strong support by the administration and must be permitted to grow and expand in faculty size in order to fully accomplish its objectives. The demand for instruction in statistics across campus remains
very high and is expanding; the department faculty must be allowed to increase in size to meet these expanding demands.

3) The Statistics Department may not always be as effective as they might in articulating its plans and desires for the future, and this might be perceived as lacking goals or vision for the future.

"While the faculty as a whole needs to become more organized and make more concerted efforts with regard to the issues of planning and assessment of programs, it should not be inferred that we collectively have no plans or goals. We have steadfastly held the goals to maintain the highest quality research and instructional programs, with the most broad and diverse coverage of all relevant statistical topics and areas of any statistics program in the country, set in an atmosphere that is strongly balanced between statistical theory and applications. Our future plans are generally always driven by our desire to achieve these fundamental goals."

4) To perform our research and instructional activities most effectively, a major required resource will always be efficient computing systems, including both equipment and support staff.* We believe that the administration should offer more support in this area. The current budget allocation for student hourly support through the CS Lab is not adequate to serve our department’s computing needs.

5) As a point partly related to (4), the fact that many faculty (mostly joint appointments) hold grants administered by other units is an issue that should be given thought by the department; we should also work on developing strategies for promoting greater success in the competition for external research funding by full-time faculty members.

There are many other more specific points and issues of concern raised and discussed in the review committee report that will initiate very serious discussion and consideration within the Statistics Department faculty. It would not be appropriate to discuss each of these in detail here, but we again wish to thank the committee for its careful attention to these various details. We would also like to point out that there are some concerns raised in the report for which attention within the department has already been focused. One particular example is in the area of graduate student recruitment, in which we have recently developed more attractive financial assistantship packages for applicants, especially domestic, and have greatly increased our recruitment efforts in terms of arrangements for campus visits for prospective students, support for their visit expenses, and so on.

In addition, I feel obligated to comment on certain statements or points of fact contained in the report that are either incorrect or could be interpreted as misleading. I would also add that occasionally statements appear in the report that seem to be based mainly on conjecture, as it is difficult to see the factual basis for these statements.

a) On p. 3, line 30 and related discussion. The Department has frequently considered and has proposed the hiring at the Associate Professor level in the past. Given the recent financial
climate, such requests were generally refused at the Dean’s office, as were other hiring proposals. This, of course, makes it very difficult for chairs to create or implement a master plan for building into the future. Perhaps in the past the department has been at fault for not adequately conveying the importance or critical nature of its needs. However, in this and a few other places in the report, criticism seems to be placed on the department for actions (or lack thereof) that are not solely under our control.

b) On p. 6, l. 21-22. We believe that the Department did participate in this year’s strategic hiring initiative proposals. Specifically, the Statistics Department had involvement in the sesquicentennial strategic hiring proposals in the area of ‘Applied & Computational Probability’ and in the area of ‘Biometry – Spatial Statistics and Statistical Genetics’, and the Statistics Department also developed and submitted a L&S focus proposal on ‘New Challenges in Statistical Computing and Data Analysis’.

c) On p. 9, l. 12-13. The concept and basic outline for a Graduate Student Handbook was initiated by the department chair, and its compilation was the result of a combined effort by several faculty and staff members, with special efforts and contributions to its completion being made by classified staff members Jude Grudzina and Candy Smith, as well as department administrator Denise Roder.

d) On p. 9, l. 24. Our department TA assignment committee works very hard and takes special care to avoid assigning TAs to more than one course. Occasionally, especially because a few of our courses have only 1/3-time appointment levels, such an assignment of a TA to more than one course cannot be avoided. But this is a rather infrequent case, and certainly is not something that occurs commonly.

e) On p. 13, l. -12 & -10. ... department has 23 faculty members. Thirteen members are full-time in Statistics, and ten members ... 5 have joint appointments in Biostatistics.


Thank you for the opportunity to submit these comments on the report of the Statistics Department Review Committee. Finally, as a point of information, I had not seen any version of the committee’s report prior to the copy that accompanied your letter of 16 March.

Sincerely,

Gregory C. Reinsel
Professor and Chair
March 16, 1999

Professor Gregory Reinsel, Chair
Department of Statistics
1210 West Dayton

Dear Greg:

Attached is the official copy of the Review of the Department of Statistics. I believe that you have already had an opportunity to review it informally for factual errors. It is our habit to give the department an opportunity to comment formally on the review in advance of consideration by the L&S Academic Planning Council. If you wish to avail yourself of this opportunity, please provide me with written comments by April 5, 1999. After that date the APC will begin its formal consideration of the review.

Sincerely,

[Signature]

Phillip R. Certain
Dean

Professor James Sweet
Associate Dean Herb Wang
March 5, 1999

REPORT OF THE
STATISTICS DEPARTMENT REVIEW COMMITTEE

Linda Graham, Department of Botany
Stefan Hastenrath, Department of Atmospheric
and Oceanic Sciences
John Kennan, Department of Economics
Robin Penante, Department of Mathematics
Bassam Shalashiri, Department of Chemistry
James A. Sweet, Department of Sociology (Chair)

Procedures Used

Dean Phillip Certain in May of 1998 appointed the Statistics Department Review Committee. The committee reviewed the Department's self-study materials, and requested a considerable amount of additional documentary information, which was supplied by the department. The committee met eight times during the academic year.

The committee chair met with the Department chair, Greg Reinsel prior to the first meeting of the committee, and again after the committee had met a couple of times. Subsequently a subcommittee consisting of Sweet and Graham met with the chair to discuss administrative matters. In addition, the same subcommittee met with the departmental administrator. An e-mail message was sent to each graduate student inviting them to participate in a group meeting with a subcommittee (consisting of Graham and Kennan) to obtain graduate student input on the department. Students were also invited to contact individual committee members by phone or e-mail, but none did. Committee members interviewed each member of the Statistics Department faculty, including those with joint appointments. Several distinguished statisticians at other Universities were contacted by telephone to obtain external perceptions of the Department. In addition, Sweet met with Paul Beebe, Director of the Computer Systems Lab, which provides computing services to the department.

We promised confidentiality to all informants with whom we spoke. In this report we do not attribute any opinions to any individual.

The Chair, the department administrator, the graduate students, and all members of the faculty were extremely cordial, open, and cooperative with the committee. We appreciate everyone's cooperation and candor.

The remainder of this report is organized as follows: we provide an overview assessment of the department, including a listing commendations and concerns. We then provide a narrative discussion and assessment of each of the following:

- The administration of the department
- The graduate program
- The undergraduate program and instruction in basic statistics
- The department's research program and infrastructure
- The issue of joint appointments
Overview of Findings

Commendations:

- The University of Wisconsin Department of Statistics is an excellent department with a distinguished history. It continues to be one of the leading American departments of statistics, both in scholarly productivity and in training graduate students. Members of the department have made, and continue to make, significant contributions to many areas of applied and theoretical statistics.
- The faculty maintains a very productive research program, making significant contributions in a wide variety of fields, and publishing in the major journals in the field and in journals in allied fields. Nearly all faculty members have active programs of research. Faculty hires over the past decade have been excellent.
- The department provides excellent graduate training, both at the Masters and Ph. D. levels. Graduates of the programs have gone on to very distinguished careers in academia, private industry and government.
- The Master’s program merits particular commendation. This is a very demanding program designed to train applied statistical consultants. The Department devotes considerable resources to the program – a capstone statistical consulting practicum each semester and a very demanding examination. There is every indication that the graduates of the master’s program are well trained and highly sought after, particularly in industrial settings.
- Each semester the department provides instruction in statistics at the introductory and intermediate levels to hundreds of undergraduate and graduate students from all over the campus. It appears that faculty and teaching assistants fulfill these instructional responsibilities very well.
- For many years, a hallmark of the department has been the application of statistics in a wide range of areas. The department is almost unique among statistics departments in the range and intensity of the applied work, and in the extent to which departmental faculty have joint appointments in other fields. Particularly noteworthy is the activity in the area of biostatistics. Maintaining a department with a large fraction of jointly appointed faculty members creates considerable strains. The Department of Statistics has managed this remarkably well.
- The department maintains a high level of collegiality, and a congenial work environment for faculty, graduate students, and staff.

Concerns:

The Committee feels that there is a large number of issues that the Department of Statistics and the College of Letters and Science should be paying attention to. Some of these are extremely serious issues that will require considerable reflection and discussion by the faculty.
- The ranking of the department among American statistics departments has slipped. At one time the department was ranked #4. In the 1993 National Research Council assessment, it was ranked #9 in scholarly productivity of the faculty and #7 in effectiveness in graduate training. We fear that since then the ranking may have slipped a bit further. And in the future, there is a risk of further decline, but also considerable potential for improvement.
Given the desire to maintain an outstanding graduate program, and the demands that the University places on the department for a broad range of instruction in introductory and intermediate statistics courses, the small size of the faculty is very limiting.

The department does not appear to have a collective vision for its future. We were impressed at the thought that individual faculty members have given to the challenges that the department faces, and the alternative choices that are possible. But, several faculty members indicated that there has been little department-wide discussion of the future of the Department. Evidently, in the past, discussion of the needs and priorities of the department often led to unpleasant disagreement; and as a result such discussion is avoided. The Department must get beyond this, and talk through the sources of this disagreement, and form as much consensus as possible as to the department needs, goals, and priorities. Only then will it be in a position organize itself to take advantage of opportunities as they arise, and to create opportunities. Continuing to drift invites disaster.

Perhaps as a cause and perhaps as a consequence of the absence of a collective vision of the future, and of a long-range plan to achieve the vision, we sense a widespread feeling of futility on the part of the faculty. This is particularly true of faculty whose appointments are fully within the Department of Statistics. The past decade has been a difficult one for the academy in general, and for the University of Wisconsin-Madison in particular. It has been a period of retrenchment; resources have been scarce. Innovation has been difficult and the size of most departmental faculties has decreased. Most departments, however, have continued to think about their future, to organize themselves to take advantage of opportunities as they arise, and to create opportunities for themselves. The Statistics Department appears to have adopted an extremely passive stance toward its environment. We think that this is not a healthy adaptation.

Again, perhaps as cause and perhaps as consequence of the previously mentioned concerns, the department does not appear to have had strong leadership over at least the past decade or longer. If the department is going to successfully define and pursue its objectives, and to thrive in the current academic environment, it needs to find a way to encourage stronger leadership to emerge. The Department needs stronger leadership in the chair’s office, and it also needs more senior faculty members who are thinking about, and working to define and implement, the Department’s collective vision.

The department has a tradition of hiring almost exclusively at the Assistant Professor level. This tradition has served it very well in the past and may continue to do so in the future. We believe that the Department and the College should be open to the possibility of some hiring at the Associate or Full Professor level as it replaces faculty members who retire or leave the University. For a variety of reasons, including the high density of joint appointments, the department may need to augment its senior leadership.

Several members of the Department have expressed the opinion that the Department overly stresses statistical applications at the expense of work on statistical theory. Other members feel that the balance is appropriate, or that this is a false dichotomy. This is an issue that the Department needs to pay attention to as it ponders its future, but it is not an issue that the Review Committee feels qualified to address.

It is difficult for the Review Committee to assess the competitiveness of the Department’s salary structure. Useful salary comparisons across Statistics Departments do not appear to be available, as they are in some other disciplines. Our guess is that parts of the Department’s salary structure are significantly “below the market”. This may be especially the case for faculty in some of the applied areas – for example, faculty members with joint appointments in CALS and Biostatistics. The Department and the College need to be sensitive to this issue and open to the possibility of salary adjustments where evidence suggests that they are needed, even in the absence of external offers. The fact that many faculty members are jointly appointed in more than one College adds to the complexity of this problem.
• The Statistics Department faculty includes a number of outstanding early- and mid-career scholars—some fully in the department and some jointly appointed with other units. We would not be surprised if other Universities targeted some of them as potential hires. The Department, the College, and the University must be aggressive in efforts to retain these productive scholars. We mention this specifically because of the additional complexities that are often involved in dealing with counter-offers for faculty with split appointments that span College boundaries.

• As noted above, most members of the faculty are highly productive, and many faculty members currently hold externally funded grants. But only a small amount of external grant money comes into the department.

Most current grants held by Statistics faculty members are administered by other units. On the one hand, this is understandable because of the large number of faculty with joint appointments and the applied nature of much of the work done by department faculty. It is, however, a problem since the department is generating only a small amount of overhead—the source of much of the capital equipment funds needed to maintain the essential research and instructional infrastructure.

A relatively small number of graduate students are supported as RA's. (Because of the large Master's program, which is not a feeder into the Ph.D. program, it is difficult to judge whether the present number is lower than appropriate.)

It is not clear to the Review Committee what, if anything, could be done to encourage and facilitate Statistics Department faculty members to more effectively compete for external funding. The Department should include this issue as a part of its discussion of its future.

• To do their work—both research and instruction—the major resource that statisticians need is efficient computing. We discuss separately the computing equipment that is on the desks of faculty, staff, and graduate students and in labs; and the servers and processors to which these desktop computers and terminals are networked.

Equipment Available in Offices and Labs—The department has made great strides in the past few years in upgrading the computing resources available for its research and instruction. Last year's lab modernization funding was of vital importance. But the current inventory of computing equipment still includes a fair amount of older equipment, and the life of computing equipment is quite short. The Department and the College need to be sure that a plan is in place that will permit the continuous upgrading and replacing of the department's inventory of computing equipment. It is not reasonable to wait until a crisis before dealing with this issue.

Servers and Processors: The department shares a building with the Department of Computer Sciences, and it contracts with the Computer Systems Lab, a unit of the of the Computer Sciences Department, to provide and maintain computing resources. Because of this arrangement the (networking and processing) resources available to the Department are excellent, and appear to meet its needs very well. This relationship is somewhat strained, however, because the Statistics Department pays only a small fraction of what might reasonably be regarded as its fair share of the cost of its members' use of the services. This is a matter that merits the attention of the College. This could become a serious issue, should the Lab be subjected to an external audit. And the Lab could undoubtedly provide a higher level of service to all of its users if Statistics paid its fair share.

Conclusion: In comparison to many other departments, the infrastructure needs of the Statistics Department are quite modest. Because the Department's computing facilities are used simultaneously for instruction, graduate student training, and faculty research, it is not reasonable for the College and the University to expect that grant funds and indirect cost funds generated by the Department cover the full cost, or even the majority of their cost. If the University wants to, and expects to, have a first-rate statistics department, it must provide a reasonable infrastructure. It is clear that the department's share of the indirect-cost capital exercise funds will not be sufficient to do this.
One area where the arrangement with the Computer Systems Lab does not appear to work as well as it might is the provision of support for administrative computing. The department urgently needs to hire a part-time person to provide support to the office staff and their applications. The Department, which has "delegated budget authority" from the College decided to devote some of this year's budget savings to this purpose. But, we understand that these funds were eliminated before this position could be created. We hope that by the time this report is submitted such a person will be in place.

The graduate program(s) appear to be well organized and rigorous. The Review Committee shares concerns expressed by various members of the department:

A very large fraction of current graduate students are international students. A high density of international students is common in American statistics departments, but it seems to be most extreme here. This is not necessarily a problem in its own right. However, an important part of the reason for this Department's high proportion of international students appears to be its inability, in recent years, to recruit domestic students. The department should place high priority on determining the reason for this, and to figuring out what might be effective remedies. (There are several possible reasons, including inability to offer competitive financial packages, the relatively large workload of Teaching Assistants, the ineffective marketing of the department's strengths, and a perception of potential students that the program is excessive demanding.)

If the inability to provide competitive financial packages is a part of the problem, the department should work on improving its competitive position. The Graduate School now offers much greater flexibility in the use of its resources. Gift funds can be tapped for this purpose. Perhaps other creative solutions can be developed. This is a problem that many other UW-Madison departments in similar circumstances have made progress in solving.

We conjecture that the department would benefit by devoting greater effort to recruiting graduate students - spending more resources on campus visits, improving the information available on the web, increasing the personal attention faculty give to locating outstanding applicants and to wooing them to Wisconsin.

It appears to the Review Committee that Ph.D. students are not being placed at a level that they should be. We are not certain that this is an accurate perception or, if it is, what can be done about it. The Department should review what it does to "market" its Ph.D. graduates.

The Department holds a regular weekly colloquium. (The departmental colloquium is supplemented by occasional colloquia in the Biostatistics Department and by visitors to Professor Wahba's research group, and other occasional visitors.) The department does not appear to be able to, or willing to, devote resources to regularly bring statisticians from other Universities to speak and consult with faculty and students. Increasing the exposure graduate students to the work of leading statisticians at other Universities would be of great value. The Department should make every effort to facilitate this.

The department's major instructional mission is providing introductory and intermediate statistics courses to students at all levels and in all corners of the campus. It offers several specialized introductory courses for students in different fields. This is a reasonable thing to do, but it requires considerable resources. The Review Committee is concerned that the department may be "spreading itself too thin," trying to do too many things with too few resources. The demands of other programs on the department seem to have gradually increased, but the resources available to meet them have diminished. We see no evidence that the department has recently reviewed its instructional program for coherence and efficiency. We see no evidence that the department has regular contact with its client departments. The department should take steps to review what it is doing in the context of the needs of the programs it serves and the available teaching resources. And it should think systematically about alternatives and priorities.
• The department should make a concerted effort to increase the amount of gift funds available to it. The flexibility that these funds can provide is invaluable to a department. (In fact, we were unable to determine how much gift funds the department receives and what it does with them.) The Department appears to have a large number of very successful graduates and its faculty work on statistical problems in a broad range of areas of application. The department should work with the College and the UW-Foundation to make its needs known to its graduates and other friends of the department.

• Opinion in the department is divided over whether the density of joint appointments is appropriate. There appears to be consensus that the tradition of joint appointments of statisticians working on applications in a variety of areas has been a vital force within the department, and there is consensus that the joint programs in biostatistics and biometry are valuable assets. There does not appear to be consensus on whether the density of joint appointments is excessive. Nor is there consensus on whether the department should seek to broaden the range of such appointments to the social and behavioral sciences, engineering, and other fields; or on whether or not the traditional ties with the Business School should be maintained.

The Review Committee does not have an opinion on what is the appropriate density of joint appointments. We do see the importance to the department of the current jointly appointed faculty members and the work that they do. And we understand some of the structural stresses that a high density of joint appointments creates. We think that the Department, the College, and the University at large should be open to the possibility of initiating joint hiring in a number of fields if appropriate candidates can be located. Statistics is inherently an interdisciplinary field, and promoting interdisciplinary work is a priority of the University. In this regard, we are extremely disappointed that the Department did not participate in any of this year’s strategic hiring initiative proposals.

Value of an External Review

The committee feels that it has a reasonably understanding of how the department works and the challenges that it faces. But we are not statisticians, and we do not have a very good understanding of what other distinguished statistics departments are doing to maintain their excellence. And we may not fully appreciate the unique niche of this Department. So, in many areas we do not feel that we are in a position to make informed recommendation regarding what the Department should do to confront the challenges it faces. We believe that the department might benefit greatly from an external review by a small group of distinguished statisticians from other Universities. We urge the department faculty and the College to seriously consider this possibility.

Conclusion

The Statistics Department has a very talented and productive faculty; there are many things that the Department does very well.

The Review Committee is, however, very concerned that the Department is not devoting energy to self-reflection, or to actively and collectively paying attention to its future. It has taken a very passive stance toward the environment in which it operates, and has become atonic to an unhealthy degree. It is also evident that the environment itself has not provided the encouragement needed to sustain the enthusiasm needed to maintain excellence.

The Department is at a critical juncture. There is considerable potential for renewal and greatness; and there is potential for drifting into mediocrity. In the preceding paragraphs we describe some of the things that we believe the Department must do if it is to embark on a course of renewal. This will take considerable work on the part of the faculty, and will require that all faculty members increase their commitment to the well-being of the Department as a whole. This is unlikely to happen unless the College first makes a commitment toward the same goal, so faculty members will sense that their effort is likely to succeed.
The Committee sincerely hopes that the Department will make this effort. And we urge the Dean of the College of Letters and Science to provide assurance that the effort will not be allowed to fail. And because the activities of the Department are so intertwined with those of programs of other Colleges, the Department will need the active support of the Provost and administrators in other Colleges.

The remainder of this report discusses various aspects of the department in greater detail.

Administration

Introduction

The department is led by a Chair (Greg Reinsel) and an Associate Chair (Jun Shao) who each have well-defined duties. There are four classified office staff members: the Department Administrator (Denise Roder), Program Assistant 3 (Candy Smith), Program Assistant 2 (Jude Grodzina), and Senior Technical Typist (Gloria Scalissi).

In addition to the self-study, information was obtained from interviews with faculty, an interview with Chair Reinsel, and an interview with department administrator Denise Roder.

Commendations

The department is run efficiently and with a high level of faculty collegiality. Office staff relations are also cordial, as are their relations with the faculty. Faculty members think that present office staff provide excellent service.

There are no discernible tensions among sectors of the department.

Faculty members are content to leave merit pay decisions in the hands of the Chair, having recently (2 years ago) experimented with a committee approach, and rejected it.

Department Administrator Roder is intelligent, energetic, competent, and knowledgeable regarding the department and how to accomplish change. Working with South Hall, she has begun a process of realigning classified staff resources in an attempt to provide the department with a computer specialist, cited as badly needed by faculty, students, and staff alike.

Concerns

The department has no long-range, future planning process and most faculty do not seem to be interested in establishing one. Although several retirements are expected to occur in the next several years, and most faculty members can cite new areas of statistics that need to be covered, the department has developed no plan for future hiring priorities. Despite widespread complaints from faculty and graduate students regarding the adequacy of instructional and office space, the department has no plan for solving space problems. Leadership, though competent in maintenance of the status quo, is unusually low-key, with a high level of inertia. Some faculty members express concern about the apparent lack of candidates for dynamic leadership of the department in the near future.

The Statistics Department relies upon an agreement with the Computer Systems Lab of the Department of Computer Sciences to provide student help with computer repair and software installation services. While this arrangement does provide excellent computing services for research and instruction, it does not always work well for the administrative staff. Sometime services are not provided in a timely manner, and the Lab does not provide support for administrative applications.
Advice to Department

All members of the department should invest considerable time and energy to thinking about departmental needs and priorities for the future. The Department should establish a long-range planning committee to help organize this discussion (but it is essential that the entire department faculty be actively involved). Given that the department has had difficulty with such discussions in the past, use of an experienced facilitator might prove useful. Perhaps a departmental retreat would be good way of allowing faculty to voice their needs and concerns in a low-pressure environment. It may also be desirable for the department to obtain advice from outside expert reviewers (respected leaders in the field) who may be able to recommend needed changes and directions for growth.

As noted elsewhere in this report, long-range planning and priority-setting must include assessing the ways in which the graduate training and undergraduate instruction are being offered, as well as developments within the profession of statistics.

The department should continue to seek ways to hire a classified staff person or LTE to provide prompt computing support for the administrative staff and faculty. Such a person should be able to deal with both hardware and (non-statistical) software issues.

Graduate Program

Introduction

The graduate program in Statistics includes separate Master's (four types) and Ph.D. (two types) degree programs that differ substantially in student composition, support opportunities, and degree of involvement of faculty.

Methods

Data used in this report included the sections of the self study report regarding graduate programs, comments provided by faculty and the Department Chair during interviews by committee members, and information received by Graham and Kannan during a meeting with about ten statistics graduate students. The interviewed students were all in the Ph.D. program, but two of them had previously completed the Master's program and were able to provide information about that program as well.

Recommendations

The Master's Program was widely cited by faculty as one of the major strengths of the department. The goal of this program is to prepare students for statistical consulting positions in government or the private sector, as well as academia. It is a demanding program with a challenging final exam in which students must demonstrate capability in providing statistical advice to clients. The Statistics Department is justifiably proud of having developed a successful capstone master's program. The faculty involved in this program are strong, high proportions of female and US students obtain Master's degrees, and students are easily able to find jobs. A few subsequently enter the UW-Madison Ph.D. program in Statistics. Most Master's students are supported by Teaching Assistantships; the Master's program would likely not exist without TA positions.

The Ph.D. program likewise successfully produces graduates who can easily obtain positions in academic and non-academic sectors (though academic positions may not be in the most prestigious institutions). Most recent graduates have been able to choose from among several attractive offers. Both faculty and students regard the quality of past and current Ph.D. students as very high. Graduate students are very
pleased with the breadth of faculty interests and training that they are able to obtain; they report no problems in finding an appropriate faculty advisor. (Faculty advisors are chosen after the second year, when students have passed a challenging qualifying examination.) Approximately one-third do not pass this exam on the first try and the relative few who do not pass on a second try are obliged to leave the program. Until they pass the qualifying exam, Ph.D. students are advised by two faculty members who primarily help in selection of courses. Students are pleased that the department is flexible in allowing them to change research focus or advisor and that there are few rigid rules. Although some faculty express to the view that the Ph.D. qualifying exam may be too rigorous, the students generally disagreed, stating that although the exam makes people very worried, the result is that they acquire an excellent grasp of the material.

Another admirable product of the Statistics Department is a Graduate Handbook, containing useful and essential information for both Master's and Ph.D. students. This Handbook was conceived and is produced by a classified staff member, Jude Grudzina, who works with the graduate students and keeps their records, and is widely regarded as an extremely valuable resource by the students. The Statistics Graduate Handbook is a good model for other departments in L&S. The TA training program appears to be effective and TA evaluation appropriately vigilant.

In addition to its own graduate program, the department serves graduate students in other departments. Many graduate students from other departments enroll in introductory, intermediate, and advanced statistics courses; and many complete minors that are in part or totally within Statistics. In addition, it appears that statistics faculty members serve on an unusual number of dissertation committees of students in other programs. This is a very valuable contribution to the University at large.

Concerns

The major concern regarding the Master's Program involves student service as Teaching Assistants. Students report that they are commonly assigned to two different courses during the same semester, and that this requires them to spend much more than 20 hours per week in preparation and other teaching activities. Although instructed to report time overloads to the professor in charge of the course (this is in the Handbook), students report that they are not required to keep records of their time, and solutions to the overload problem are not typically found. This problem extends to first year Ph.D. students, who are also often supported on Teaching Assistantships.

As noted earlier, the Master's program is separate from the Ph.D. program. Presently there is no way to grant a Master's degree to students who have done well enough to pass the demanding courses required in the first year of the Ph.D. program, but not well enough to pass the Ph.D. qualifying exam. Possibly this could be fixed by instituting a new MA degree, distinct from the existing MS degree.

The Ph.D. program attracts primarily students from Pacific Rim countries. A history of associations between the UW and China was cited as a partial explanation for this pattern. The relatively low proportion of American Ph.D. students is regarded as a concern by some faculty members, but not by others. In 1997-98, the department made 20 offers to US students, but only one entered the program. Lack of competitive stipends is believed to be a factor.

Many of the international students serve as teaching assistants. One faculty member said that his undergraduate students regularly complained about the language capabilities of international students, but current and recent department chairs and associate chairs, and an informant in South Hall report few student complaints about the language ability of Statistics Department Teaching Assistants.

Time to Ph.D. graduation averages 5 to 6 years, though the occasional student finishes in less time. Students report that desirable graduate courses were sometimes canceled due to low enrollment. We are not certain how often this occurs, or whether it is a serious problem.

Although computing access was viewed as much improved over past conditions, some students cited lack of sufficient capacity to handle large data sets and lack of needed adequate software were cited by some
students as impediments to their progress. When asked about this concern, faculty members indicated that they did not believe that this was a problem and had not heard this concern expressed.

Other problems mentioned by students included the lack of a departmental specialist who could rapidly fix computer and software problems, and lack of fellowship support.

After the first year, it appears that most Ph.D. students are supported as Research or Project Assistants (frequently on projects in CALS or the Medical School). Students report that, generally, they have little difficulty finding such support. Often these positions require performance of work that is not directly related to their thesis problems.

Graduate students are not regularly exposed to outside speakers in a colloquium series, as is common in most departments. Except during periods of faculty recruitment, local speakers usually provide colloquia. The graduate students who we interviewed expressed the opinion that Wisconsin faculty are the best in the world in the areas of statistics in which they were interested, so that outside speakers were not necessary. In general, faculty members were also unconcerned about the absence of prominent outside speakers.

Many of the graduate students with whom we spoke indicated little interest in areas of statistics outside their own. Some students complained that their faculty advisors did not participate widely enough in conferences, and thus seemed relatively unknown to academics at other institutions. This was viewed as detrimental to students’ ability to impress faculty at other institutions with their background and training, during job interviews. It is difficult to assess the validity of this concern.

In recent years, UW-Madison PhDs have not often been hired by the top Statistics Departments. In contrast, Madison hires products of these top institutions. This suggests that improvements could be made in the standing of the UW-Madison Statistics Ph.D. program.

No departmental assessment of the graduate programs was available, nor do we see evidence of a plan to undertake such an evaluation. Consideration of strategies for improvement of the graduate programs is not in evidence. The overall trajectory of the graduate programs is the status quo at best, and there are some indications that the program is relying too heavily on its past accomplishments and is in danger of slipping further than it already has.

Advice to Department

The department should review its Ph.D. program, with the goal of making it one of the best programs in the United States. Changes in the recruitment process and in the graduate curriculum might be considered. An ongoing assessment process should be instituted.

The current colloquium program provides graduate students with valuable exposure to the work of UW-Madison faculty members. Greater exposure to leading statisticians from other institutions would be extremely valuable to the intellectual development of graduate students. If paying the costs of visitors is the reason that few visitors are invited to offer colloquia, funds should be sought for this purpose. And when statisticians whose work is of interest visit Madison, they should be invited to offer department-wide colloquia.

Efforts should be made to avoid assigning Teaching Assistants to more than one course, in order to reduce overtime work. TA’s should be required to keep records of time spent in TA-related activities. Such records should be used by the department to devise strategies to avoid overtime.
Undergraduate Program and Instruction

Overall impression

The Department has very few undergraduate majors. This is common for American statistics departments and is not a cause for concern. Nationally, the small number of statistics majors may fuel the difficulties in recruiting domestic graduate students, but the obligation to solve this does not fall on the shoulders of this department. While no faculty member that we interviewed feels that there is potential to significantly expand the number of majors, some feel that with somewhat more attention the major could be made more attractive for a modest number of additional students.

The vast majority of undergraduate students enrolled in statistics courses are not statistics majors. Students in these courses are drawn from many programs in all parts of the campus. Many of these programs include a statistics course or courses as a degree requirement.

The demand for undergraduate statistics instruction in statistics remains very large, while the size of the Statistics Department faculty has declined by 30 percent since the last departmental review in 1978. As a result, a large proportion of the Department's instructional resources is devoted to introductory and intermediate courses at the undergraduate level. The department has made modest use of academic staff (lecturers), rather than permanent faculty, to fill some of its teaching needs. In recent years additional demands from Pharmacy and Engineering programs have been added to the departments teaching mix. And several faculty members expressed the view that additional programs (some who are currently providing their own statistics instruction) are likely to ask the Department to serve their students.

We note that many departments, particularly in the social and behavioral sciences, currently provide elementary and intermediate statistics instruction to their own undergraduate and graduate students. Some of these introductory statistics courses also serve students from outside the home department. That other departments are offering instruction in statistics does not seem to be perceived as a problem by faculty in the Statistics Department. In any event, it would not be possible for the Statistics Department to meet this demand with current instructional resources.

Clearly, many members of the Statistics Department faculty are excellent teachers, and some have won teaching awards. Faculty members have authored excellent texts in a variety of areas of statistics.

The review committee did not uncover any systematic complaints about the quality or content of instruction, nor were there indications that the Chinese and other international teaching assistants were inadequately prepared in English.

Recommendations

The department is doing all that is asked of them in the realm of undergraduate teaching. It is not easy to serve as many diverse client departments as they do with the size of teaching staff that is currently available. Overall, it appears that the quality of instruction is very good.

Concerns

The Review Committee found it somewhat difficult to assess how well the Department is meeting its undergraduate teaching mission. Many faculty members are excellent teachers; several have won awards for their teaching. Individual faculty members talked about the courses that they teach, but no one seemed to have a feel for how the department as a whole was fulfilling its teaching responsibilities. We found no evidence that the Department has a systematic way of assessing how well it is meeting the needs of other programs whose students it serves.
In our interviews, members of the Statistics Department faculty did not expressed much concern as to whether the broader University’s statistics instructional needs can continue to be well met with the current number of teaching staff. Nevertheless, the review committee is concerned that larger class sizes or increased use of temporary instructional staff will lead to degradation of quality of instruction.

You faculty members report that the teaching environment is supportive and meets their expectations. The fact that the faculty teaching load is two courses per term, with a high proportion of those being undergraduate courses, may be negative for recruiting faculty, but apparently not too great a deterrent.

Advice to Department

The Department should make a greater effort to regularly assess how well its courses are meeting the needs of students in its client departments.

The Department should review upper level course offerings to determine whether any of the core theoretical courses could be offered less frequently. Perhaps these courses are simply too important to treat this way, but that should be a conscious, rather than a tacit, decision.

If the size of the faculty is such that undergraduate needs cannot be met without resorting to increased use of temporary instructional staff or unacceptably large class size, it is the department’s responsibility to bring this to the attention of the Dean.

Recommendations to the Dean

With a department that serves vital University needs, it is important to keep an eye on whether their resources are adequate for continued high-quality instruction. The number of undergraduate credits per instructional FTE appears strikingly high. While the Review Committee is not able to definitively conclude that the courses cannot reasonably be taught under current staffing levels, some of the numbers appear ominous. Certainly, there is no room to shift teaching resources from graduate to undergraduate instruction, while continuing to meet the needs of the graduate program and keep teaching assignments attractive to faculty.

Research

Overall impression and commendations

A large proportion of Statistics Department faculty members are very productive researchers, making significant contributions in a wide variety of areas. Their work is published in the leading journals of statistics and allied fields. Members of the department bring a significant amount of external funding into the University.

The work of statisticians involves both theory and applications, and most individual statisticians and all statistics departments engage in both kinds of activities. Since its creation, the emphasis in the U-W-Madison Statistics Department has been on applications. The department has recruited extremely well-trained and creative statisticians, and fostered their involvement in applying statistics to cutting-edge problems in other fields. This continues to be true today, although certainly not to the exclusion of the development of statistical theory. What is unique about this department is not only the emphasis on applications, but the extremely broad range of areas in which members are making significant contributions. Many members of the department commented on the intellectual stimulation that this environment provides, and on the importance to their own work of contacts with diverse applications in diverse fields.
Concerns

There appears to be widespread appreciation among the faculty of the value of applied work, and general approval of the applied/theoretical balance within the department. Most department members appear to feel that the applied/theoretical balance is appropriate, or that this is a false issue. However, a few members express a concern that the balance has swung too far in the applied direction. Some feel that the Department would benefit from cultivating stronger ties with the very strong probability group in the Mathematics Department. Since we are not statisticians, it is impossible for the Review Committee to offer an opinion on this issue. That at least a minority of the faculty expresses this opinion suggests to us that it is an issue that warrants thoughtful discussion by the faculty. We note that this issue is related to, but also distinct from, the issue of joint appointments, which is discussed in detail in a later section.

We have concerns relating to the availability and funding of the Department's research computing resources. These concerns were discussed earlier.

Many members of the department have been very successful in obtaining extra-mural research funding from a variety of sources. Most of the funding is administered by other units, and not by the Department of Statistics. This is, in part, a consequence of so many faculty members having joint appointments. Its effect is that the department generates only a small amount of indirect costs, and that the funds returned to the department in the capital exercise is not adequate even to replace equipment that wears out or becomes obsolete.

Several full-time members of the department have not been successful, at least in recent years, in obtaining external research funding. Some of them appear to have research programs that should be competitive for such funding. The Department should do everything that it can to encourage and facilitate its faculty to prepare and submit high quality grant proposals. Members who have been successful in obtaining external funds and those who have experience as reviewers of research proposals should be willing to devote time to giving feedback to the proposals of their colleagues.

Joint Appointments

The Department of Statistics is quite unique among the departments in the College of Letters in the density of joint appointments. Because it is unique, and because most faculty members with whom we spoke commented on it, the Review Committee paid particular attention to this feature of the department. What we found is very complex.

Presently the department has 23 faculty members. Fourteen members are full-time in Statistics, and nine members of the department have budgeted joint appointments in other departments.

- 4 have joint appointments in Biostatistics
- 3 have joint appointments in CALS
- 1 has a joint appointment in Mathematics
- 1 has a joint appointment in the School of Business

One additional member has a non-budgeted joint appointment in Biostatistics. Note that only one of these joint appointments is with another L and S department.

Historically there has been greater joint involvement with the Engineering and Business Schools.

Some of the most productive members of the department, making great contributions to both basic and applied statistics, are part-time in statistics.
A very noteworthy development over the past decade or so has been the growth in both the size and the stature of the Biostatistics program in the Medical School, under the outstanding leadership of Professor David DeMets. Everyone we interviewed - statistics faculty members and external informants alike - notes the importance of this development to the overall statistics program.

External opinion is that the Wisconsin Department has been strikingly successful in maintaining the joint appointment.

Members of other distinguished statistics departments express great respect for the success that Wisconsin has had in fostering interdisciplinary applications through joint appointments. Some have attempted to emulate this in their departments with very limited success.

Most members of the Department feel that having a high fraction of faculty with joint appointments has been beneficial, and that the department has learned to make this work.

Nearly all members of the faculty regard the fact that the department includes a large number of faculty with joint appointments in other departments as a positive feature.

There is some concern with whether the department is "saturated" with joint appointments.

There seems to be a division of opinion as to whether or not the department is "saturated" with faculty with joint appointments. Some members feel that the department should be open to, and in fact aggressively seek, additional joint appointments in areas such as Engineering, Business, Applied Math, Computer Science, or the Social or Behavioral Sciences. Others feel that although the high prevalence of joint appointments in the department has been largely beneficial, the fraction of faculty with joint appointments should remain stable or decrease. Several also feel that the department would benefit by the addition of faculty on unbudgeted joint appointments.

Most members of the faculty take pride in the department's ability to manage joint appointments.

The department appears to have collegial environment. Part-time members of the department appear to be respected by the full-time members, and vice versa. Faculty members with joint appointments report that they feel "as at home", or "more at home" in the Statistics Department than in their other Department. The department appears to do a good job of mentoring Assistant Professors, including those who have joint appointments in other departments.

Faculty members with joint appointments appear to be about as involved in the governance of the department as faculty who are full-time in Statistics.

The Department seems to work to control the overall amount of committee work that is required. Nonetheless, there is considerable work to be done, and members who are less than full-time in the department do a reasonable share of it.

The exception to this are the roles of Chair and Associate Chair, which in recent years, at least, have been filled by members who are full-time in the department. The only recent exception to this has been Bob Miller who served a term as chair a decade ago.

There do appear to be some problems associated with managing a department with a large fraction of faculty with joint appointments.

A particular problem is the merit exercise, where raises for members with appointments in other departments have to be negotiated with other departments and other colleges.
Members of the department express the view that it will be very difficult to orchestrate future joint appointments in the Business School and the College of Engineering because of the higher salary structure in Business, and the lower teaching load in Engineering.

The review committee feels that if this attitude is pervasive, it is likely to be an unfortunate self-fulfilling prophecy. If the department feels that pursuit of joint appointments with these Colleges is desirable, it should do it. This is a problem that has been successfully dealt with by many other programs at the University, and we are confident that the Statistics Department and the L and S administration can find ways to do it.

Recommendations:

It is difficult for the Review Committee to judge whether the department should seek to maintain its present mix of full-time and jointly appointed faculty, or to increase or decrease the fraction of jointly appointed faculty. We think that this is an issue that the department should give serious consideration to. We see little evidence that there has been much serious discussion of these issues in the past.

If the department concludes that further joint appointments in particular areas would be good for the department and the University, it should be aggressive in initiating discussions with relevant Deans, department chairs, and faculty.

If the department thinks it desirable to pursue joint hiring with other departments, within or outside of the College of Letters and Science, we think that the College Administration should be supportive.

There are many areas where potential joint appointments would seem to offer considerable potential. These include:

- Engineering – for example Chemical Engineering and Industrial Engineering
- Social and Behavioral Sciences – Economics, Psychology, Sociology, Epidemiology, Demography
- Business – Finance, Actuarial Science
- Mathematics
- Computer Science
- Spatial Analysis
- Genetics