1. The field of statistics is central to the process of scientific inquiry.

Statistics involves a unique combination of mathematical reasoning, modeling of real-world phenomenon and large-scale computing. As a result, statistical scientists draw upon a wide range of mathematical theory and methods and scientific disciplines to address any particular research problem. This requires a high degree of synthesis of disparate ideas.

2. The UW-Madison Statistics Department has evolved to meet changing needs.

Statistics course sizes and range of subject matter have grown. A new breed of faculty bring fresh ideas to tackle today's large-scale problems. In particular, they are concerned with making sense of high dimensional, complicated data that is rich in structure, going far beyond the traditional t-test of yesterday.

3. The opportunities for statistics continue to expand.

Statistics students at all levels are getting jobs. Even our recent faculty are finding more lucrative job prospects elsewhere. We have continued Box's original idea of developing formal and informal relationships across campus to further the excellence of our common scientific enterprise. However, the reduction of faculty size has severely limited our ability to collaborate and excel at many levels.

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The role of statistics in modern society is widely accepted. An article in *The New York Times* on August 5, 2009, entitled 'For Today's Graduate, Just One Word: Statistics', stated that 'In field after field, computing and the Web are creating new realms of data ... the digital data surge only promises to accelerate, rising fivefold by 2012.' Erik Brynjolfsson, director of MIT's Center for Digital Business, said, 'The big problem is ... the ability of humans to use, analyze and make sense of the data.'


*Smart Money* on August 25, 2009, reported the “5 College Majors That Can Help You Get a Job”. Perry Wong at the Milken Institute said, 'Statistics majors tend to be highly sought-after graduates and are often hired into lucrative positions straight out of college.' In addition the article stated, 'Companies from all sectors look for statistics experts, including pharmaceutical and insurance companies and Wall Street firms.... “You need statistical analysis to do anything regarding research and to assess various alternatives,” says Stephen Leeb, ... Leeb Capital Management.'


These articles touch on many fields of study that our undergraduates and graduates choose for majors, with the common need need for training in concepts and methods of statistics. Chancellor Biddy Martin emphasized in her UW inaugural on October 24, 2008:

'The world needs citizens who know the difference between a gene and a chromosome, who understand and can use statistical methods, who know the difference between correlation and causality, who not only use computational tools and logic, but can actually develop them and direct them to worthy ends.' http://www.news.wisc.edu/15834

Associate Dean Eric Wilcots, in a meeting in September, 2009, wondered if all L&S majors should be required to take a statistics course. It seems clear that top administrators at UW-Madison value the leadership of the Statistics Department in training our citizens in quantitative reasoning through the core principles of our field. Statistics is now required in many undergraduate programs here at UW. As a result, our introductory courses are usually completely filled within days of being opened.

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It may help to ask: What is the field of statistics? It is many things, including 1) a mathematical science, proving new results and creating new mathematical sub-fields; 2) a laboratory science with the computer as the primary laboratory tool, having comparable needs to biology and physics laboratories, discovering new ways to properly analyze massive amounts of data; and 3) an information science, building new methods to properly extract meaning from data, with close affinity to computer science, computer engineering, business information.

Our field is in high demand, whether that is measured in terms of undergraduate instruction, degree programs at all levels, or competition for hiring and retention of faculty. This is an international trend, reflective of the increasingly data-rich world in which we live. We have consistently taken leadership roles on campus, nationally and internationally. We have responded to a steady increase in demand for introductory statistics courses by growing the size of these classes. Our undergraduate major has grown from 10-15 in the 80s and 90s to over 40 in the past year.

The evidence of our importance can be seen in the quality of our graduate students, who consistently are rewarded high-paying positions in academia, industry and government. Many students have won awards of excellence from our societies.

However, lack of manpower limits our ability to implement expected future trajectory. At a time of evolving needs, our faculty size has declined, particularly since 2004 due to a
death, retirements and transfers. The faculty reduction has led to increasing reliance on LTE instructors, of varying quality, to teach large, introductory classes. Faculty salaries have not been competitive for some time, well below the national median in Statistics. The teaching load, unofficially reduced from 4 to 3.5 courses per academic year, is much higher than comparable institutions.

**Computing facilities:** The massive influx of data in many fields has lead to a concomitant increased dependence of the field of Statistics on IT staff. More and more statistical research is done with cluster servers of 10s or 1000s of computers. As the UW Statistics Department has physically been moved away from the Computer Sciences Laboratory (CSL), we have had increasing need for local support of both large servers and of workstations configured as 'thin clients'. Further, Web 2.0 resources are becoming an important part of statistical research and practice, requiring sophisticated management of data and software.

3. The opportunities for statistics continue to expand.

The Statistics undergraduate major has doubled in recent years. At the same time, availability of TA positions for the primary training courses has been greatly reduced or has disappeared. Consequently, the course discussions have dwindled. These discussions, focused on computer-based experiments, comprise the critical laboratory experience that is central to training quantitative literacy, a combination computing and statistical reasoning.

The intense growth of the bachelor-level job market in statistics necessitates that we focus more attention on this sector. Further, a modest fraction of these undergraduates will consider a graduate degree in statistics or another quantitative field. Statistics works closely with the Department of Biostatistics & Medical Informatics (BMI) on its summer training programs for minorities and other domestic students in biostatistics and bioinformatics.

Statistics teaches a substantial number of engineers in introductory and advanced statistics. Further, our department is once again involved in considerable collaborative research in engineering, with a recent grant submitted in the nanotechnology area. However, there are currently no formal ties that would guarantee and enhance this collaboration in teaching and research. It would seem beneficial to all parties to build linkages for long-term growth.