

March 2013 • Issue #429

AMSTATNEWS

The Membership Magazine of the American Statistical Association • <http://magazine.amstat.org>



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Statistical Research
Grants from the NIH

Not Everything
That Counts Can
Be Counted



To: CEOs of US Software Companies
From: Paul Lewicki, CEO, StatSoft, Inc.
Date: October 22, 2012
Re: Aid for European Struggling Economies

Dear Colleagues,

As some of you may know, StatSoft has launched a program to offer free Enterprise Business Analytics software to struggling companies in Greece, Portugal, and Spain with the intent to help the economy in these developed and, until only recently, thriving nations, where now 25% of the population cannot afford the most basic necessities such as adequate nutrition or health care.

I invite you to join this initiative, which will not only reduce human suffering, but also have global, long-term benefits of reducing the risk to the Euro and the global economic system.

In our (software) industry, we are in a unique position to help tremendously those companies that are now in the paradoxical situation where (a) their highly educated workforce and developed infrastructure is prepared to greatly benefit from software designed to increase productivity and international competitiveness, but (b) their lack of credit prevents them from making any investments and acquiring the critical tools (software) that would radically increase their chances for a quick recovery.

These companies need not only the Advanced Analytics software that StatSoft is providing; they also need software for database management, enterprise resource planning, factory automation, and many other software tools and solutions.

The anticipated (caused by this program) loss of revenue for our industry from these cash strapped nations will be - in the case of most midsize software companies - limited to just a few million dollars; but, the "Return" on this small "Investment" in terms of the social and global benefits is virtually priceless given the depth of that economic calamity.

I have had discussions with my counterparts at several large software companies. While all of them understood the benefits, they raised concerns regarding the significant and unbudgeted cost involved in supporting this initiative, but there are a number of creative ways in which these costs can be reduced. We at StatSoft have developed some of them, and we are happy to share our ideas with you.

Also, we do not recommend that the free software offer be unconditional (e.g., multinational companies are excluded from the StatSoft program), and your company should include its own limitations. The time to act is now; if we wait until the next fiscal year, it may be simply too late.

I am looking forward to hearing from you and working with you on this initiative where every party involved will be a real winner.

Paul Lewicki, CEO
StatSoft, Inc.



StatSoft Offices



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This column highlights research activities that may be of interest to ASA members. This article includes information about new research solicitations and the federal budget for statistics. Comments or suggestions for future articles may be sent to the *Amstat News* managing editor at megan@amstat.org.



Taylor

Contributing Editor

Jeremy M G Taylor is a professor of biostatistics at the University of Michigan. He completed his education at Cambridge University and the University of California at Berkeley. He is co-editor of Biometrics.

31 MASTER'S NOTEBOOK Not Everything That Counts Can Be Counted

This column is written for statisticians with master's degrees and highlights areas of employment that will benefit statisticians at the master's level. Comments and suggestions should be sent to Megan Murphy, *Amstat News* managing editor, at megan@amstat.org.



Adams

Contributing Editor

Jean Adams is a statistician with the U.S. Geological Survey - Great Lakes Science Center and the Great Lakes Fishery Commission, both headquartered in Ann Arbor, Michigan. She earned a master's degree in statistics from the University of Wisconsin - Madison and gained many valuable life lessons from two years with the Peace Corps in Papua New Guinea.

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STATtr@k is a column in *Amstat News* and a website geared toward people who are in a statistics program, recently graduated from a statistics program, or recently entered the job world. To read more articles like this one, visit the website at <http://stattrak.amstat.org>. If you have suggestions for future articles, or would like to submit an article, please email Megan Murphy, *Amstat News* managing editor, at megan@amstat.org.



Buckingham

Contributing Editor

Janet Buckingham is a staff analyst at Southwest Research Institute in San Antonio, Texas. She works with teams of engineers, scientists, and analysts by applying statistical techniques to solve problems benefiting government, industry, and the public through innovative science and technology. For more than 27 years, she has volunteered on ASA chapters, sections, task forces, and committees. She currently serves on the ASA Board of Directors as a Council of Sections representative.

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The ASA will celebrate its 175th anniversary in 2014. In preparation, column "175"—written by members of the ASA's 175th Anniversary Steering Committee and other ASA members—will chronicle the theme chosen for the celebration, status of preparations, activities to take place, and, best yet, how you can get involved in propelling the ASA toward its bicentennial.



Stigler

Contributing Editor

*Stephen M. Stigler (PhD Berkeley) taught at the University of Wisconsin-Madison before moving in 1979 to The University of Chicago. He served as editor of *JASA Theory and Methods* from 1978–1981 and president of the Institute for Mathematical Statistics and International Statistical Institute. His publications include the books *The History of Statistics* (1986) and *Statistics on the Table* (1999).*

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Doctoral Training in Statistics and Biostatistics: Where Are We Headed?

It has been 26 years since I began my academic career, joining the department of statistics at North Carolina State University as an assistant professor. But it doesn't seem like it's been that long (or that I could be this old). Maybe that's because I've had such a good time.

What I have enjoyed most is working with students and thinking about how best to train them, particularly at the PhD level. Over this period, I have developed and taught many courses and been involved in curriculum revision and innovation. And I've seen our field evolve from one that, within academia, stressed the mathematical aspects of statistics to one that has become much more application and computation driven.

This evolution has inspired my department and others to review our curricula periodically and introduce new courses, exam structures, and so on. At the PhD level especially, revisions have been mostly incremental. With some exceptions, most departments maintain a PhD curriculum based on a set of "core" courses covering what is considered fundamental, foundational material; one or more qualifying exams evaluating mastery of the core and possibly other material; and elective courses covering "standard" areas such as multivariate analysis and "special topics" based on faculty research interests. Most have some sort of consulting requirement.

This means that students entering a PhD program with a bachelor's degree take three years of course work in many cases. A growing challenge has been figuring out how to sustain adequate coverage of core and traditional material while introducing students to new topics. Or, for that matter, figuring out if we should.

At no time has this challenge been greater. The genomics revolution and technologies for remote sensing, medical imaging, astronomical

observation, and so forth are generating massive new data structures. These Big Data—big news these days, as past-president Bob Rodriguez discussed in his June 2012 column (<http://magazine.amstat.org/blog/2012/06/01/prescorner>)—pose enormous new analytic and computational problems, and, as Bob argues, statisticians must bring their unique understanding of uncertainty and the threats of bias, confounding, and false discovery to the table. The rapid pace of new breakthroughs begs the question of whether our curricula require more than incremental revision.

Our PhDs must graduate with the analytic and computational skills to confront this age of massive data and with foundational mastery of our discipline. They must also have the communication and leadership skills to work in an interdisciplinary setting. I know my department has struggled with this challenge. This led me to wonder how other departments are responding. I decided to find out.

In an admittedly non-rigorous survey, I wrote to 33 chairs/heads of statistics and biostatistics departments and asked them to share their experiences by answering the following questions:

- Has your department undertaken a formal effort to revise your PhD curriculum in light of these developments, and, if so, how?
- Has your department introduced new courses in direct response to Big Data challenges?
- How has your department approached the tension between exposing students to new innovations and coverage of core and traditional material?
- Does your department offer courses or other training experiences in communication and leadership skills?



Marie Davidian

A few departments have replaced traditional exams with exercises requiring students to synthesize a research area and write a journal-style article.

I received thoughtful responses from 55% (18) of them. I know how busy they are, so I am willing to assume the responses of those who were able are representative of what is taking place. Here is a summary of the salient points.

Four departments reported no recent, systematic effort to modify their curricula or plans to do so. The rest indicated that they had either revised their curricula to varying degrees within the past five years or are in the midst of curriculum evaluation now, inspired by Big Data developments.

Several departments noted that they made a deliberate decision to hire faculty with expertise in genomics, computational biology, and high-dimensional data to develop new courses, direct research, and set the department's future direction. Many reported moving to engage students in interdisciplinary collaboration in the first year by introducing a major data analysis project or requiring a revamped consulting course involving significant interactions with scientists, presentations, and written reports. Several have reduced the number of exams to discourage students from being distracted by exam preparation. A few departments have replaced traditional exams with exercises requiring students to synthesize a research area and write a journal-style article. Many reported introducing or modernizing and requiring at least one statistical computing course.

Almost all departments have introduced other new courses, many focusing on Big Data topics, with titles mentioning statistical and machine learning, data mining, computational and molecular biology, genomic science, high-dimensional data, and, in a few cases, Big Data explicitly. Several have developed advanced computing courses, including topics such as convex optimization and parallel computing, and require these or are considering making them required. Three mentioned a new course on causal inference. In a few cases,

development of such courses was prospective and deliberate, while the vast majority of departments reported they were conceived by individual faculty as "special topics" courses. Three departments would like to offer such courses, but have limited faculty resources.

Views on balancing coverage of the core with that of new topics were diverse. The consensus in several departments is that coverage of core material such as probability, inference, linear models, measure theory, etc., is essential, and no plans for revision were reported. Others have taken steps to streamline. Several departments have merged two-course sequences on measure theory and advanced inference into one course of each to make room for other courses, and some have pared the core down to a first year of probability, inference, and linear models, after which students pursue specialized "tracks." Still others maintain a full core, but have de-emphasized some classical topics (decision theory was mentioned twice) to make room for modern ones.

A few chairs opined that the current model of several years of coursework may not be viable much longer and that we should consider the biology/computer science approach of less coursework and immersion in research much sooner. Others thought we cannot hope to expose students to everything and should focus on providing a traditional core foundation on which they can build after graduation.

Only a few departments reported having formal courses targeting communication and leadership skills, but most require students to interact with other scientists and give presentations through data analysis projects, lab rotations, and compulsory consulting courses. Two departments require courses on teaching skills, and others have courses on research skills and scientific communication and statistical leadership (<http://magazine.amstat.org/blog/2012/02/01/statisticalleadership>).

I deliberately restricted this survey to PhD training to keep it focused (and keep this column within the length limit). Several chairs also noted that their departments had undertaken significant curriculum revisions at the master's level.

The take-away message: There is a lot of thought and innovation taking place regarding the future of PhD curricula. I hope this informal compendium is helpful to departments as they move forward and that it inspires discussion not only in academia, but in industry and government, about the best training models for meeting the Big Data challenge.

Marie Davidian

Post-Enumeration Surveys in Africa

Jeremiah P. Banda, Alfredo Navarro, Rajendra P. Singh, and David C. Whitford

The UN Statistical Commission recommends that post-enumeration surveys (PES) be undertaken to measure the coverage of a census. In the 2010 round of censuses, some countries in Africa not only followed this recommendation, but enlisted PES/census “experts” to assist.

In South Africa, the PES is used to adjust for the undercount, so Statistics South Africa implemented it carefully. For instance, aerial photos were used to more clearly delineate sampled housing units to be interviewed in the PES. And, to evaluate the matching of the PES interviews to the census, a sample of areas was “rematched”; the results showed that the matching was statistically reproducible. Subsequently, the undercount was estimated and the census counts were adjusted accordingly. The adjusted official census counts were disseminated about one year after census day.

The Zimbabwe National Statistics Agency (ZIMSTAT) conducted its fourth census since independence in August 2012. Since the census data usages have increased significantly over the years, the ZIMSTAT considered it critical to evaluate the census data quality. One of the evaluation methods employed is the post-enumeration survey. This is the first time ZIMSTAT is implementing a PES. The goal of the evaluation is to understand the census data quality with respect to coverage and content errors at the national level and gain insight to improve future censuses. However, the PES is designed to account for urban/rural variation in coverage. The PES data collection was completed in November of 2012. Matching and estimation processes are planned for early 2013, and the PES evaluation is expected to be completed by mid-2013.

Ghana successfully conducted a PES following the 2010 Population and Housing Census. The objective was to measure census coverage and content error. Issues also were identified requiring improvements in future censuses. A representative sample of enumeration areas (EAs) was selected. All households and persons in the selected EAs were to be enumerated. Inferences were made at national and regional levels. Initial matching was followed by reconciliation visits, after which the final match status of all cases was established. The Dual System Estimation methodology was adopted and implemented. The results of the PES were not used to adjust census results.



Two of the authors and a U.S. Census Bureau employee with their colleagues on the Zambian PES team

Other than conducting the census, one of the highest priorities for the Zambia Central Statistical Organization (CSO) is developing and implementing a comprehensive evaluation of census data quality. The first PES was conducted right after the 1990 census. After the 2000 census, a PES was implemented, but the results failed to meet minimum quality standards and the CSO decided against releasing the results.

Following the recent 2010 census, a PES was implemented. This time, the PES execution plan included getting assistance from the U.S. Census Bureau through the Agency for International Development. Census Bureau assistance was provided through the planning and implementation of early PES operations such as clerical and computer matching. Subsequently, the focus shifted to increasing capacity through training, especially software and statistical knowledge.

The capacity-building mission focused on the design and implementation of efficient methods for handling missing data (imputation), dual-system and small-area estimation, and the estimation of reliability measures (variance estimation). Training was focused on increasing statistical knowledge and the development of statistical software, mainly desktop applications in SAS. The PES evaluations and reports are expected to be completed by the spring of 2013.

In all four of these efforts, countries not only produced high-quality censuses, but also, in accordance with UN guidelines, evaluated their products—two worthy goals of large-scale statistical endeavors such as taking censuses. ■

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The Future of ASA's Electronic Publications, Part 2

Ron Wasserstein, ASA Executive Director

This is the second in a series of articles about the future of the ASA's electronic publications. Last month, we began the series with a discussion about the future of journal structure, the article submission process, and peer review (see http://magazine.amstat.org/blog/2013/02/01/e_pubs_asa). The purpose of this series is to collect feedback from the statistics community about a variety of issues related to what our journals should become over time.

In this month's installment, we seek your comments about the desired content of the electronic journal of the future. The easy answer, of course, is that we want *all* of the content and functionality discussed below, and more besides. But all this comes at a cost, and cost issues will be addressed in a future article in this series.

Article Length and Structure

In the print world, page cost dictates journal size, which dictates page length for articles. In the electronic world, "page limits" are a non-issue. A side benefit of page limits, however, has been that authors and editors have to think hard about the essentials of articles. This forces a certain discipline of brevity, but also means important information is sometimes left to readers to interpolate. What should the article of the future include that is often omitted now?

Supplementary Content

Related to the article, itself, may be many kinds of supplementary material: data sets, computer code, graphical information, additional examples or case studies, photos, audio or video, etc. These materials were used by the author in conducting the research, and likely will be helpful to others who wish to do further research. When should such materials be included in the publication? Always? At the author's discretion? Should these materials be included in the peer review process of the future?

Another form of supplementary content is reader comments (and, possibly, ratings provided by readers). Discussion threads may then emerge as readers comment on the remarks of other readers. Should an electronic journal provide the option for readers to respond to the articles they read, and should those comments and discussion threads

(moderated or otherwise) reside in perpetuity with the article? What is the best way to find and remove unprofessional comments?

Errata

In print-based publications, errors an article may contain reside in perpetuity with the article. Errors, sometimes found many years later, are published in errata documents in future journals and may or may not be discovered by a person who has come across the original erroneous journal article and is unaware of the error(s). Electronic journal articles can be corrected when errors are found, while preserving the original version and subsequent revisions. Is this the way errata should be handled in journals?

Nontraditional Content

Many important documents are written that are not in the purview of traditional journals. Often such material is called "gray literature," and, for statisticians, could include technical reports, design protocols, unpublished weighting schemes for federal surveys, replications of experiments, lecture notes, old qualifying exams, and more. Should the ASA provide a home for gray literature in statistics?

Interaction with the Content

For all this content to be ultimately beneficial, readers need to be able to find it and engage with it. What search capabilities are needed beyond those currently available in ASA journals? And should readers be expected to search, or should ASA journals provide notifications when new materials are presented based on user interests and preferences?

When interesting material has been located, what should we expect of that material? Graphics can be interactive and code can be easily accessed and used with new data brought by the reader, for example. Are such capabilities important?

Please Send Us Your Comments

We are eager to receive your comments about these matters. Please leave a comment at the end of this article online at <http://magazine.amstat.org> or email ASA Executive Director Ron Wasserstein at ron@amstat.org. All comments will be read by a panel appointed by the ASA Board to review and summarize feedback. ■

ASA Welcomes Lynn Palmer, Director of Programs

Melissa Gotherman, ASA Graphic Designer/Production Coordinator



ASA Director of Programs Lynn Palmer is busy at work at the ASA office in Alexandria, VA.

The ASA is pleased to announce that J. Lynn Palmer has joined its staff as director of programs.

Palmer earned her BS and MS in sociology from Oklahoma State University in 1976 and 1978, respectively. While completing her MS, she was required to take two graduate-level courses in statistics. “I loved them, and they seemed to click with what I wanted to do with my career,” Palmer said. That led her to complete an MS in statistics from Oklahoma State University in 1980 and a PhD in biometry from The University of Texas Health Science Center in 1988.

Her career in statistics began at the Department of Vocational and Technical Education, Research Unit, in Stillwater, Oklahoma, while she was still a statistics graduate student. There, she analyzed data for reports and eventually was able to take the lead on a project in which she designed, conducted, analyzed, and wrote the entire report.

Prior to arriving at the ASA, Palmer was employed as an associate professor at The University of Texas MD Anderson Cancer Center (MDACC) in Houston, Texas, for more than 22 years. While at MDACC, her research focused on investigating the effects of estimating or ignoring missing data that was not missing at random. She also developed a Bayesian population model to determine optimal timing for blood stem cell collections in breast cancer patients scheduled for high-dose chemotherapy. Her collaborations with medical researchers focused

on treatment, care and concerns of palliative care patients, and integrative medicine. She also spent time collaborating with researchers in the behavioral sciences and, in the past five years, has been on 25 grants (most through NIH/NCI).

Palmer is starting at the ASA at an exciting time. It’s the International Year of Statistics, and next year the ASA will celebrate its 175th anniversary. “I am looking forward to learning about the many ways the profession of statistics is being practiced in the U.S. and internationally and how our profession can improve society on a local and global level.”

When asked what attracted her to the position of director of programs, Palmer said she liked the “big picture” of being able to contribute on a larger level through the ASA. Her current vision for the position is to design, develop, and implement new programs geared toward serving ASA members in areas such as career development and for promoting the practice and profession of statistics.

In particular, she wants to consider new programs for students, younger statisticians, applied statisticians, women, minorities, and international members. “Some of these programs are already in place, and some could be strengthened, and new programs could be developed,” she said. She also wants to provide leadership for existing programs to ensure their continued success and is keeping her options open to contribute to the ASA in a more creative and meaningful way.

Palmer has been an ASA member since 1980. She served as secretary (1996–1998) then president (1999–2000) of the Houston Area Chapter. From 2002–2004, she served on the ASA Board of Directors as Council of Chapters representative. During that time, she was also chair of the Committee on Career Development and a member of the Committee on Women in Statistics. In 2007, she served as chair of the Council of Chapters. From 2008–2010, she was chair of the *Journal of Computational and Graphical Statistics* Management Committee. In 2008 and 2009, Palmer served as a member of the Founders Award Committee, and, in 2009, was chair of the ASA Nominations Committee, serving the previous year as a member. In 2010, she became a Fellow of the ASA.

Palmer also has attended most JSMs since becoming a member. This year, she is looking forward to attending as a staff member. “It will be great to see how JSM is organized from the other

side of the mirror. I look forward to meeting new people on the committees to which I am a liaison and having more opportunities to meet and learn more about the great diversity of the members of the ASA.”

Palmer is also active outside of the ASA. In 2012, she served as president of the Caucus for Women in Statistics and is currently past president. She is one of the four original organizers for a proposed conference, Celebrating Women in Statistics 2014: Know Your Power, and a Fellow of the Royal Statistical Society. She was recently elected to membership in the International Statistical Institute and is a long-time member of the International Biometric Society and International Society for Bayesian Analysis. Over the course of her career, Palmer has authored or co-authored more than 175 journal articles.

In her free time, Palmer likes to run (she has completed 44 marathons), read, and travel. She has traveled to many parts of the globe with her husband, Paul Maley, who is a dedicated amateur astronomer. Maley has been organizing eclipse tours since 1970, and they have been fortunate to see approximately 20 solar eclipses together.

Have a question for Lynn? Please contact her at palmer@amstat.org. ■

Villanova to Host Nonclinical Biostatistics Conference

The biennial Nonclinical Biostatistics Conference will be held October 15–17 at Connelly Conference Center on the campus of Villanova University in Villanova, Pennsylvania. The conference will provide a venue for the presentation and discussion of scientific and statistical issues in biomarkers/discovery; preclinical safety/toxicology; and chemistry, manufacturing, and controls. Two short courses on technical topics also are offered and included with registration.

This is the third such conference held in the United States. On even-numbered years, a similar conference is held in Europe. Additional information, key dates, registration, and abstract submission materials can be found at www.ncb2013.org. Questions, suggestions, and comments may be directed to info@ncb2013.org.

The Nonclinical Biostatistics Conference is organized by statisticians from the pharmaceutical industry, academia, and U.S. Food and Drug Administration in collaboration with the department of mathematics and statistics at Villanova University.

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Web-Based Training Program Continues to Be Successful

Shailaja Suryawanshi, Merck & Co., Satrajit Roychowdhury, Novartis Inc., and Rick Peterson, ASA



The program has attracted a broad audience of industry statisticians, academic researchers, government statisticians, and graduate students . . .

In-depth topic reviews and training using webinars have become a standard teaching tool for the Biopharmaceutical Section. It and the ASA Center for Statistics Education launched the program in March of 2007 to provide an alternative to live training courses. With budget cuts that affect travel-related activities and individual training costs across the board, webinars have emerged as a low-cost way to deliver training. Additionally, travel time constraints for live training sessions are alleviated, allowing members to participate in smaller focused groups.

Webinars offered this year have included the following topics and presenters:

- **Impact of Phase 2 Dose-Finding Study Design on Phase 3 Probability of Success and Net Present Value** by James Bolognese, Cytel, Inc.
- **Comparing Strategies for Trials with High Placebo Response** by Anastasia Ivanova, The University of North Carolina
- **Bayesian Evidence Synthesis in Drug Development** by David Ohlssen and Heinz Schmidli, Novartis, Inc.
- **Introduction to Pharmacokinetic/Pharmacodynamic Modeling for Statisticians** by Alan Hartford, Agensys

The program has attracted a broad audience of industry statisticians, academic researchers, government statisticians, and graduate students, with both attendees and presenters indicating that the webinars are convenient. A few hundred people participate in each webinar, with many taking advantage of wider localized audience participation using a single registration fee. Currently, most participants are based in the United States, but there is hope of organizing sessions that will allow participation from countries in other time zones.

Based on feedback received by the organizers, the low cost of each webinar is one of the most attractive features of the program. The Biopharmaceutical Section subsidizes the program to provide its members with the lowest possible rate. The registration fee for section members is \$44. The fee for other ASA members is \$59, but they have the option of joining the Biopharmaceutical Section for \$8 and receiving the section member rate. The registration fee for non-ASA members is \$74.

For more information about the web-based training program, visit www.amstat.org/sections/sbiop/webinarseries.html. Additional materials and interactive options are available at www.biopharmnet.com/doc/doc03002.html.

The section is working on the 2013 program and encourages readers to share their suggestions for future webinars by emailing ASA Education Programs Associate Rick Peterson at rick@amstat.org. ■

Midwest Biopharmaceutical Statistics Workshop on Tap for May

The 36th Midwest Biopharmaceutical Statistics Workshop (MBSW), with the theme “Sharing Statistical Solutions,” will be held at Ball State University in Muncie, Indiana, May 20–22 at the alumni center.

The workshop will begin with two half-day short courses—Survival Data Models by Terry Therneau and Handling Informative Censoring by Diane Fairclough—before moving into the afternoon plenary session. Plenary speakers are Lee Wilkinson and Frank Harrell. They will discuss expert systems and statistical graphics, among other topics.

As usual, the workshop will have four parallel tracks with sessions on Tuesday and Wednesday. The four tracks are Clinical;

Discovery/Pre-clinical; Chemistry, Manufacturing, and Controls; and Health Outcomes and Observational Research. Each track will have three sessions at least two hours in length with 3–5 speakers.

A student-focused session organized by Yun-Fei Chen of Eli Lilly and Cathie Spino of the University of Michigan also will be part of the MBSW.

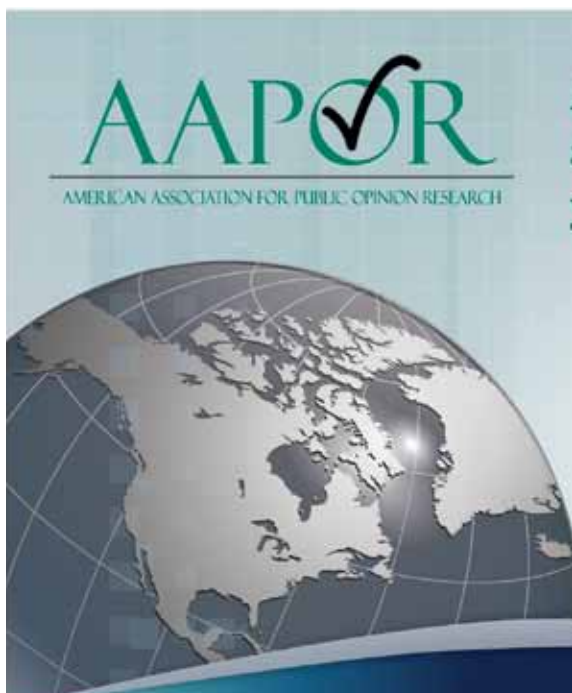
Additional opportunities to meet speakers and network will take place during the Monday evening mixer and Tuesday social hour and banquet. Paul McKenzie of Johnson & Johnson will give a talk titled “Leadership and Career Development” during the banquet.

Contributed posters are being accepted for the poster session, which will be held on Tuesday. Posters will be considered on

any biopharmaceutical statistical topic. Abstracts must be submitted by April 10. See the workshop website at www.mbswonline.com for details.

Students are encouraged to participate in the MBSW activities. To help financially, limited scholarships are available to offset travel costs, with preference given to students who present posters. Students or faculty sponsors interested in applying for scholarships should visit the workshop website or contact Fangyi Zhao at zhao_fangyi@lilly.com for details.

Questions can be sent to Melvin Munsaka, publicity chair, at melvin.munsaka@takeda.com; Bill Pikounis, workshop chair, at chair@mbswonline.com; or Dale Umbach, local arrangements chair, at dumbach@bsu.edu. ■



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ASA Board of Directors Candidates

The ASA announces the selection of candidates for the 2013 election. The winning candidates' terms will begin in 2014. Make sure to look for your ballots in your email inbox and to vote early. Voting begins at midnight EST on March 15 and ends at 11:59 p.m. PST on May 3.

Complete candidate biographies can be read at www.amstat.org/candidatebios/candidatebios.pdf.



President-elect

Christy Chuang-Stein

Vice President, Statistical Research and Consulting Center, Pfizer Inc.



Chuang-Stein

I am honored to be considered as a presidential candidate for the ASA. Our association is full of brilliant statisticians. While we differ in our statistical training and expertise, we share the same passion for statistics and a common desire for a strong professional identity; they bind us together as members of the ASA. It is through this shared membership that I reach out to you as a presidential candidate.

What could I offer to an organization that will soon celebrate a rich history of 175 years? Guided by its strategic plan, the ASA has many ongoing activities in support of statistical literacy and outreach, expanded membership benefits, increased ASA presence on Capitol Hill, new meetings, and publications. If elected, I will continue to support these worthy endeavors. In addition, I offer my energy and leadership to the following:

Accelerating the Pace of Using Statistical Excellence to Influence Decisions and Policies

At its heart, statistics is an applied science. It transforms information to knowledge, knowledge to decisions, and decisions to actions. The success of our profession is critically dependent on our ability to actively contribute to this process, by transforming our technical excellence to pragmatic solutions and thereby influencing decisions and policies. We have seen this play out successfully in areas such as medicine and auto industry. In this increasingly fast-paced age, we need to accelerate this transformation. One way to enable this is to rigorously promote and facilitate statistical partnerships among academe, industry, and government. I am convinced such partnerships will open up new frontiers of statistical applications and earn statisticians the reputation of invaluable partners in the 21st century.

Celebrating the Achievements of Statisticians in All Sectors of Employment

The ASA has committees that address the needs of groups such as women, minorities, and applied statisticians. There is another type of diversity, rooted

in the roles we play and talents we possess in our profession. As the strategic plan encourages the ASA to be “The Big Tent for Statistics,” we need to make sure the Big Tent celebrates the achievements of statisticians in all roles. Along with placing high value on innovations in research, we also should headline innovations in education, applications, and statistical engineering. We can start this journey by reviewing the award process within the ASA and making adjustments if necessary. I believe an award system that recognizes diverse achievements will not only encourage greater membership engagement, but also foster greater appreciation of each other in the Big Tent.

Call Members to Service

As General Colin Powell once said, “Organization doesn’t really accomplish anything. Endeavors succeed or fail because of the people involved.” The most valuable asset of an association is its members. Many statisticians have built up the ASA to what it is today through their active participation in chapters, sections, committees and the ASA Board. I believe it is crucial to create a strong culture of volunteerism and invite all members to own a piece of our association’s future. A strong activism culture can help ensure that our association continues to grow, to be strong and forward-looking for future generations of statisticians. One way to progress this is to recruit young graduates to serve on our committees and give them a strong voice on the future direction of our association.

Participating in working groups with statisticians from all sectors of employment, serving on the Fellows Committee, and chairing the 175th Anniversary Committee have given me unique experience and insight into the above goals. I am excited about the opportunity and look forward to the chance of working with you to achieve these goals.

President-elect

David Morganstein

Vice President, Director of Statistical Group, Westat, Inc.



Morganstein

I deeply appreciate the nominating committee putting forth my name as a candidate for the position of president. It would be an honor to continue serving the ASA in this new role. We face exciting new opportunities addressing topics such as Big Data and supporting statistical practice. We embarked on a road to improve communications with other organizations and the news media, steps that will improve our visibility in the world. Some attempts have been made to create a mentoring network to support younger members in their professional growth. I am excited at these first steps and support them.

The ASA is a multi-cultural, diverse organization with many special and varied interests. I would pay careful attention to the many distinct concerns of our members and bring this understanding to our planning for the ASA's future. Our world is seeking evidence-based answers to a host of complex issues, and the ASA membership's breadth of skills offers a way to navigate the growing flood of data. Our very rich community offers a wide variety of perspectives, and we are at our strongest when we learn from each other and try to set priorities that serve as many of our members as possible. I heartily support, and in the past have assisted, the association's effort to engage its membership through soliciting their views as vital input when reaching decisions.

The association's strategic plan focuses on a number of areas that are both of personal and professional interest, namely, statistical practice, visibility of the profession, and membership growth—areas to which I would continue to contribute.

Statistical Practice

The ASA continues in its efforts to balance our profession's vital contribution of sound theory with equally important good practice. Statistical practice is the subject of a new annual ASA conference, first held in 2012. The meeting attracted a variety of association

members, and I'm pleased to continue my own participation by offering a tutorial at CSP 2013.

Having worked in and consulted to industry and government most of my career, I have learned that sharing best practices, an issue closely related to statistical ethics, is an invaluable part of professional growth. In chairing the deliberations of the International Statistical Institute's ethics committee as it re-wrote its Code of Ethical Behavior, it was clear to me that there is much to be discussed and shared on ethical principles and statistical best practices.

Visibility

The leadership of the ASA and our executive director has expanded our efforts to increase the visibility of our profession and association recently. A number of important steps have been taken: hiring a public relations coordinator, holding training sessions for board members on how to increase the effectiveness of communications with journalists, and identifying popular media that might be open to running news items that highlight the contributions of our members. These steps offer a great opportunity, and I am eager to assist in developing and expanding them.

Membership

As someone who was encouraged and guided professionally early in my career by more senior statisticians, I think our association could help create mentoring networks in our chapters, sections, and member organizations. There have been a few trial efforts to create such links. There are challenges to find suitable mentors and match them, but our members' collective knowledge regarding social networks could be tapped to help accelerate these activities.

Finally, in recent years, the ASA office has taken exciting, proactive steps to find new ways to serve members. I look forward to addressing our challenges and expanding our opportunities.



Vice President

Jeri Metzger Mulrow

Program Director, National Center for Science and Engineering Statistics, National Science Foundation



Mulrow

The ASA as the “Big Tent for Statistics” really resonates with me. Ever since I joined the ASA as a graduate student, I have felt that ASA is like a home. It is a place where I feel welcomed and comfortable.

As an applied master’s-level statistician, this may sound surprising to some. However, the ASA has provided me with many great opportunities. I have been able to meet and work with many interesting statisticians, continue my statistical learning through short courses and presentations, and lead as chair of several ASA workgroups and a member of the Board of Directors as the Council of Sections Governing Board’s board representative. I even traveled to China as part of a People to People Ambassador Program in 2010.

However, I think there is room for the ASA to improve. Statisticians are a diverse group, working in many areas on many types of issues. There continue to be new and emerging areas of statistical research and practice. Our focus and needs are always changing. Our leaders must recognize this diversity and steer the organization accordingly. I

think there is space in the “big tent” for all of us, but we must continue to work at it.

As with any diverse group, people’s opinions differ and things don’t always go smoothly. This is good. It would be boring if we all agreed on everything and no one had a unique thought. The challenge is to listen to the differences and create an amenable solution. I believe what I learned from my past experience on the board would help me do this. Therefore, I am honored to be nominated and excited to be a candidate for ASA vice president.

If elected, I would look forward to working with many terrific people and promoting the practice and profession of statistics. I am particularly interested in hearing from members (and future members) about their interests and needs. The board is already tackling some big issues related to the future of publications, structure of the Joint Statistical Meetings, visibility of the profession, and cohesiveness of continuing education and professional development. I am anxious to look ahead to see what other issues the board should take on.

Anna Nevius

Supervisory Mathematical Statistician, Center for Veterinary Medicine, Food and Drug Administration



Nevius

I feel honored to have been asked to be a candidate for the office of vice president of the ASA. Over the years, the ASA has played an important role in my development as a statistician. From my first years as a graduate student in statistics at Kansas State University, my professors instilled in me the obligation and privilege of being an active participant in the statistical world, which included membership in the ASA. I have lived by that principle and found that many doors have been opened to me because of my membership.

I have had the opportunity to serve on committees such as Outreach, Women in Statistics, and Membership. I also have been privileged to serve in various capacities on the executive committee of the Biopharmaceutical Section, including chair.

Most of my working life has been as a supervisory mathematical statistician at the Center for Veterinary Medicine, Food and Drug Administration. Previously, I worked as an instructor in statistics at the University of Nebraska.

These life experiences have led me to especially embrace two of the strategic plan initiatives—membership growth and education. Too many statistical colleagues do not see the need for active membership in the ASA. The challenge is to provide membership incentives that motivate them to want to become members. In today’s world, with so much “free” information on the Internet, finding enticing membership incentives is challenging, but a task I would like to pursue.

My other passion is promoting statistical education, beginning in kindergarten. Part of my responsibilities at CVM/FDA has been to recruit statisticians for our group. This has been one of the hardest tasks, as the employment opportunities have far exceeded the employment pool.

I would welcome the opportunity to serve on the board as a vice president of the ASA, working with other board members to find ways to embrace the strategic plan as we promote the field of statistics in our 175th year.

Council of Sections Board Representative

Cynthia Long

Professor, Palmer Center for Chiropractic Research, 2006, and Director of Research, 2011



Long

I am honored to be a candidate for the Council of Sections (COS) Governing Board Representative to the ASA Board of Directors. I have actively participated in five ASA sections throughout my 25 years as an ASA member and truly value the opportunities it has given me. I have made friends, fostered professional networks, and worked toward common goals with many statistical colleagues. Over the past 15 years, I have been fortunate to be involved in the leadership of three sections, holding positions of publications officer, program chair, and chair. I just completed the last year of my term as representative to the COS for the Teaching of Statistics in the Health Sciences Section.

My career thus far has been as a biostatistician and director of a research center in a non-traditional setting, where I have developed and enhanced our

research infrastructure and cultivated collaboration to build a successful research program. My experiences and unique perspective give me the ability to communicate effectively with section leadership and the Board of Directors regarding issues that are important to the sections. I think I can successfully represent the diverse membership of the sections on issues of direct relevance to the ASA's current strategic plan, including increasing the visibility of statistics as a profession, promoting the value of statisticians, establishing continuing professional development opportunities and standards, and enhancing the organization of JSM without diminishing its broad appeal to ASA membership. I would find it extremely rewarding to serve the ASA in this role.



Miller

Jackie Miller

Auxiliary Associate Professor and Education Specialist, The Ohio State University

I would be honored to serve our profession as Council of Sections Representative to the ASA Board. The Council of Sections is made up of individuals from diverse backgrounds and experiences, but with similar interests who come together

in sections. As COS representative, I will strive to increase the visibility of our profession and continue the open dialogue between the board and Council of Sections so we can help all ASA members be a part of our parent organization.

Council of Chapters Board Representative

James J. Cochran

Bank of Ruston Endowed Research Professor, Louisiana Tech University



Cochran

I am honored to be a candidate for Council of Chapters Governing Board (COCGB) Representative to the ASA Board of Directors. ASA chapters are the core of the organization's ability to generate interest and enthusiasm for its initiatives and activities at the grass roots level, so the opportunity to represent chapters on the ASA Board of Directors is particularly appealing.

Serving as COCGB representative would provide me with an opportunity to use what I have learned as a member of the COCGB and Council of Sections, co-founder and co-chair of Statistics without Borders, and co-chair of Friends of Australasia to develop and facilitate processes through which chapters can help the ASA achieve its goals of generating

greater awareness of the profession and increasing the inclusiveness of the organization. I also can use what I have learned as the organizer and chair of a series of international teaching effectiveness colloquia (held in several countries) to develop strategies for achieving effective outreach through the creation and delivery of professional development courses. These activities demonstrate my commitment to the organization's goals of increasing the visibility of the profession and reinforcing the organization's position as an inclusive "big tent" for statistics.

Journals and meetings are primary sources of revenue for the ASA, and the organization is facing issues with each of these functions. The ASA Board of Directors is dealing with uncertainty about the



future of journals. Will other delivery systems ultimately supplant print? How do we move our journals in this direction in a cost-effective manner with as little disruption as possible? How do we identify and take advantage of the benefits of moving our journals in this direction? As a COCGB representative to the board, I would have an opportunity to apply what I have learned through my experience as editor-in-chief of an electronic journal (*INFORMS Transactions on Education*), founding editor-in-chief of an online and print encyclopedia (*Wiley Encyclopedia of Operations Research and Management Science*), and associate editor for seven other journals to this critical issue.

The ASA Board of Directors also is dealing with the rapid growth of the annual Joint Statistical Meetings (JSM 2012 in San Diego featured more than 50 concurrent sessions). While this growth is

a result of increased appreciation for what our discipline has to offer and so a positive outcome, we must be concerned with how we can be the “big tent” of statistics without further increasing the number of sessions at JSM. I look forward to applying what I have learned through my experiences participating in the organization of JSM and conferences of organizations such as the International Statistical Institute, Institute of Mathematical Statistics, Institute for Operations Research and the Management Sciences, and International Federation of Operational Research Societies to this issue.

I would welcome the opportunity to represent the interests of chapters, further integrate chapter members and officers in ongoing ASA activities and initiatives, and work with the ASA Board of Directors and the organization’s members to accomplish the organization’s goals.

Daniel Jeske

Professor and Chair, University of California at Riverside

I believe participation in the ASA is a critical piece of our identity as professional statisticians. Obvious benefits include opportunities for networking, continuing education, and free online access to some of the top journals in our field. For me, one of the most rewarding benefits is what I learn from interacting with statisticians who work across a diverse array of environments.

As ASA members, to elevate and promote our profession, we must act as self-appointed ambassadors. Our individual participation in local chapters, for example, might encourage a student, inspire a colleague, or bring an otherwise isolated statistician into the camaraderie of our profession. As the Council of Chapters Representative to the ASA Board of Directors, I would bring this type of mindset to my work on the important issues facing the board.



Jeske

International Representative to the Board

Ming-Yen Cheng

Professor of Statistics, National Taiwan University

The ASA has been playing a key role in the promotion of research, application, and dissemination of statistics. I have been a member of ASA since 1994, the year I earned my PhD degree. This experience has greatly helped my career as a researcher and educator in statistics, and so I am particularly honored to be given the opportunity to stand for the election for the international representative to the ASA Board of Directors.

I was educated in Taiwan and the United States and have working experience in Australia, Taiwan, the United Kingdom, and United States. I have been involved in various activities of the ASA and IMS. If I were elected, I would contribute to the ASA’s effort for statistics education at all levels; activities to promote links, exchanges, and collaboration between statisticians from different parts of the world; and recognition of the importance of statistics to our society, science, and technology.



Cheng

International Representative to the Board

Masahiro (Masa)Takeuchi

Professor of Clinical Medicine (Biostatistics, Pharmaceutical Medicine), School of Pharmacy, Kitasato University



Takeuchi

My education in statistics and working experience as a statistician in both academia and government regulatory agencies in the United States and Japan has made me interested in applying for the ASA's position of international representative to the board. With my experience establishing the first department of biostatistics in Tokyo with both a master's and doctorate program in biostatistics, I think I can be a liaison between the United States and Japan in education and government regulatory statistical science.

In Japan, mathematical statistics is predominately theoretical, and there is a lack of attention given to education in biostatistics. After the ICH movement, it is clear that the role of biostatistician is important in drug development and review of new drug applications to the Ministry of Health, Labor, and Welfare. Education and practice in biostatistics

require statistical theory and communication with medical practitioners.

My 10 years' working experience as a mathematical statistician at the U.S. Food and Drug Administration has changed my view of statistical practice. Different from the academic and journal publication setting, a robust estimate of standard error of the estimated efficacy to preserve p -value is important for drug review. In regulatory affairs, the type I error rate is the most important idea, and crucial for understanding results.

As an international representative to the ASA board, I believe I can apply my knowledge and experience in both the United States and Japanese academia and regulatory agencies. I hope to provide and stimulate unique statistical research issues to the ASA for international collaboration.

ASA 2013 Election Candidates List

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Linda Young, University of Florida

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Julia Sharp, Clemson University
Ji-Hyun Lee, Moffitt Cancer Center

Vice Chair, District 6, Region 3

Xiaoming Sheng, University of Utah
Jo Hardin, Pomona College

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Stephen Gulyas, Optum, Inc.

Vice Chair, 1st year

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Stacey Lindborg, Biogen Idec

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Catherine Calder, The Ohio State University

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Chair-Elect

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Jeffrey Morris, MD Anderson Cancer Center

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John Johnson, Registrat-MAPI

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Ciprian Crainiceanu, Johns Hopkins University

Program Chair-Elect

Haipeng Shen, The University of North Carolina at Chapel Hill
Genevera Allen, Rice University ■

FUNDING OPPORTUNITIES

Statistical Research Grants from the NIH

Jeremy M G Taylor, University of Michigan

Most statisticians with faculty positions at universities and research organizations expect to undertake original research. While it may be possible to achieve this with funds from your own institution, obtaining funds from external sources almost certainly will enhance your research. In addition, such funding is likely to be an important element in criteria for promotion.

There are many governmental and other organizations that can provide support for statistical research. While the National Science Foundation is probably the most common source of support for more theoretical research, the National Institutes of Health (NIH) is by far the biggest supporter of more applied methodologic research motivated by applications in health, medicine, and biomedical science. The purpose of this article is to provide an overview of how statistics grant applications are generally reviewed at the NIH and guidelines for preparing a grant application.

Assistant professors who are engaged in biomedical research tend to start thinking about writing grant applications 2–3 years after their first appointment. At first, they may partner with more senior investigators and act as a co-investigator on someone else's grant application, either a statistical methodology grant or a nonstatistically focused scientific project. This is an important activity for statisticians and a useful learning experience, but the focus here is statistical research grants from the NIH as a principal investigator.

Grant Mechanisms

The NIH supports biomedical research through many kinds of grant mechanisms. Sometimes

individual institutes or centers may solicit applications to undertake research in specific areas that are high priority for that institute or center. NIH would issue a request for applications (RFA) on a program announcement (PA). These RFAs and PAs will tend to have specific rules and instructions for submission. They may or may not have specific funds set aside to support them. They may exist for long periods of time, or may only be available for a short period. RFAs and PAs may be reviewed differently from unsolicited grant applications; sometimes they will be reviewed by a regular study section, and sometimes a special review panel will review them. Although RFAs and PAs targeting statistical methods are relatively rare, some will express interest in methodological issues that might include statistical methods. A listing of RFAs and PAs can be found at <http://grants.nih.gov/grants/guide>. Visit www.statfund.cancer.gov for information about possible funding opportunities for statistical research.

Unsolicited research grant applications can be of a number of types, including R01, R03, R15, R21, and K99/R00. R01s (research project grants) are the most common mechanism used by NIH to fund individuals to pursue their own research ideas. NIH accepts new R01 applications in February, June, and October. R01 grants are for well-conceived and novel research ideas with important and probably multiple related aims, and would require preliminary data or preliminary research.

There are several other mechanisms worth considering. For example, R15 grants (academic research enhancement awards) are designed to support research

by faculty located in institutions that have not been major recipients of NIH research grant funds. R15 grants are required to involve students, as well.

The R03 grant mechanism (small grants) is worth consideration as a means of obtaining short-term funding with a small budget to enable you to pursue a project that could then lead to a full-scale proposal. The R03 grant mechanism might be useful for a young investigator's first grant application.

R21 grants (exploratory/development research grants) are for a two-year period with a fixed and limited budget. They are designed to support high-risk projects and require less preliminary data than a typical R01.

While all institutes in NIH will fund R01 grants, the policies regarding support of R03, R15, and R21 grants differ between institutes, and not all institutes accept unsolicited R03 and R21 applications.

K99/R00 grants (Pathway to Independence awards) are designed to facilitate the transition of a researcher from a mentored postdoctoral period (K99) into a faculty position (R00). These grants are personal fellowships that include a significant research project. They are open to statisticians at some institutes, but because the criteria by which they are assessed differ from usual research grants, they will not be discussed here.

In a recent change to the grant application process, all applications are now submitted in response to a funding opportunity announcement. NIH has developed Omnibus PAs (http://grants.nih.gov/grants/guide/parent_announcements.htm) for use by applicants who wish

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to submit what were formerly termed “unsolicited” applications. This process does not diminish the interest of NIH institutes in investigator-initiated, unsolicited research grant applications. NIH continues to welcome “unsolicited” applications in statistical research in the same way it does in any other area of biomedical research.

General Review Process

Nearly all applications are processed through the Center for Scientific Review (CSR) and receive a careful initial screening to ensure practical requirements have been met (e.g., page limits, font sizes, required forms, signatures, and budgetary information). Once successfully through this step, grant applications receive two critically important assignments. One is to an institute that will fund the grant, should it pass the rigorous standard of peer review. The other is to a “study section,” which will provide the independent peer review to assess the scientific quality of the proposal.

In general, institute and study section assignments are separate. A particular study section will review the scientific merit of applications with a common disciplinary theme, but that may have a variety of institute assignments. Presently, we’ll talk about the specific study section (BMRD) in which most statistical methods grants are reviewed. The assigned institute uses the outcome of the study section to help decide whether to fund the proposal.

While the review from the study section and the score it assigns is strongly associated with the likelihood of funding, it is not the only factor that determines funding. The discussion at the study section and written review will not mention funding. NIH has a dual peer review system, with the first review by the study section and the second by the

institute. Different institutes have different budgets, their own priorities, and their own policies regarding allocation of resources. The leadership at each institute will ultimately decide which grants are funded, with input from the scientific staff at the institute.

An investigator can influence the institute and study section assignments. For example, it is a good idea to include a cover letter requesting assignment to a specific study section for review and institute for possible funding. The CSR and institute generally accommodate these requests, if possible. It is also important to choose an appropriate title for the proposal and to write a clear, concise abstract that allows a reader to get a sense of the proposal immediately.

Because biostatistical method is a relatively small and specialized field, it often will take some time and effort to identify the appropriate target for your application. Your proposal will have the best chance of success if it focuses on the development and application of statistical methods of direct relevance to one or possibly two institutes. For example, someone interested in working on methods for evaluating surrogate endpoints in HIV vaccine studies might choose to target their proposal to the National Institute of Allergy and Infectious Disease. Someone interested in methods for processing and integrating genetic and genomic data might draw the interest of the National Human Genome Research Institute.

Choosing the general focus for your proposal is a critical first step. It is a good idea to talk to colleagues in your department about how their work is funded. Attending workshops, such as those sponsored by ENAR, provides another opportunity to receive feedback on how to frame your research proposal. It is a good idea to check the websites of potential institutes to identify

History of the NIH

After a humble start in 1887 as a one-room laboratory of hygiene, today’s National Institutes of Health (NIH) comprises 27 institutes and centers. Among the larger institutes are Cancer; Allergy and Infectious Diseases; and Heart, Lung and Blood. Most NIH offices are headquartered just outside Washington, DC, in Bethesda and Rockville, Maryland.

The NIH supports biomedical research through both intra- and extramural programs. Intramural research is that done by scientists employed by the various institutes within NIH. However, the bulk of the NIH budget goes into its extramural programs, which fund researchers at various universities and research institutions throughout the United States, and even internationally.

current areas of priority and to make contact with the program officers who work in the extramural research divisions of those institutes to talk about your ideas and gain feedback.

Program officers can provide valuable advice about strategies to enhance your proposal’s likelihood for funding. The program officer will generally be someone who understands statistics. They also will understand the mission of their institute and be a strong advocate for well-conceived research grants that align with that mission. The program officer may observe the review of your grant application at the study section, but they play no part in that review or in determining the score for your application. Their feedback after the review, however, could be valuable to you.

NIH designates the principal investigator (PI) of an application as a new investigator if they have not previously competed successfully for a significant research award, such as an R01. An early stage investigator is a new investigator who is within 10 years of completing his or her terminal research degree or residency. The new investigator and early stage investigator designations

can be helpful to a grant application, both in how it is reviewed and—for R01 applications—its chances of funding.

A list of websites that provide information for would-be grantees can be found at <http://grants.nih.gov/grants>.

Writing the Proposal

Once you have decided on the general focus for your proposal, you should start planning the details. Assuming you already have an active research program under way, you should allow at least six months of relatively focused effort to put your first proposal together.

It is important to submit the most polished application you can for your first submission. Testing the water by throwing in many ideas to see which the study section like with the idea of better developing them in the revision is probably not a good idea. You would be wise to ask a senior colleague who is experienced in grant submissions and reviews to carefully read and critique a draft of your grant application. Colleagues at other institutions also may be willing to give you advice about the specifics of your research, but you should be aware that they then would be considered in conflict with your application and not able to review it at a study section.

NIH has strict guidelines for how your grant should be formatted, which can be found at <http://grants.nih.gov/grants/forms.htm>. For example, you must include all required sections, adhere to page limits, and use clear, readily legible fonts that satisfy strict minimum size requirements. Required sections such as your face page, project description, key personnel, table of contents, budgets, and biographical sketches for key personnel need to be filled out on specific forms. While it is important to have all the administrative details correct, the two most

important parts of your proposal are your project description and specific research plan.

The project description should summarize your proposal succinctly and in such a way to give a clear sense of what you will do and why it is important. This short write-up provides you with an opportunity to catch the attention and interest of reviewers and convince them that something exciting is coming along. Having a well-written project description also is important because it may be used by staff in the Center for Scientific Review to assign your proposal to a study section and institute. The project description should be written in a way that a scientifically trained, but not necessarily statistically trained, person can understand. If your proposal is funded, the project description will be made publicly available, as well.

The specific research plan consists of a number of sections, including specific aims, research strategy, bibliography and references cited, plus other sections of an administrative nature. The permitted length of the research strategy section differs depending on the funding mechanism. For R01 applications, it is 12 pages; for R03 and R21 grants, it is six pages.

Specific Aims

This is where you outline the list of concrete problems you plan to tackle. This section would generally begin by briefly describing the context of the problem and articulating why the type of research you are proposing is important. It is a good idea to arrange your specific aims into three or four main groups, with each containing two or three related and specific sub-aims. You should establish a numbering system for your aims and sub-aims (e.g., 1a, 1b, 1c, 2a, etc.) Data sets you will be using in your research are important to mention in the specific aims.

If you plan to develop software for others to use, that should be mentioned and could be one of the specific aims. This section is restricted to one page.

Research Strategy

This should have three subsections: significance, innovation, and approach.

Significance: This subsection should convince the reviewer that the problems listed in your specific aims section are strongly grounded in and motivated by important issues in health sciences research. You must convince reviewers that by accomplishing those aims, you will contribute significantly to the advancement of biomedical research. This section also needs to convince reviewers that you know the literature and your specific aims have not been accomplished by someone else already. Hence, it is important to include the appropriate references in this section. This section also can be used to describe applied work or data analysis that has served as the motivation for the proposed methodological research.

As you then work your way through the motivation for each specific aim and sub-aim, try to keep a consistent numbering system. Remember, an important goal is to make your proposal as readable as possible for reviewers. You want your aims and logic to be clearly articulated all the way through.

You should provide details about the applications that motivate your proposed research, along with data sets that will be used in your work. Referring to letters of support from subject matter specialists will generally be helpful. For most data sets or biomedical research applications, there are already existing methods that could be used. Thus, it is important for you to convince the reviewer that your methods are sufficiently different and likely to lead to different conclusions.

This section also should describe the likely impact of your work. Ideally, your proposed research should have an impact on both statistical methodology and the advancement of knowledge in an area of application. Many people use this section to describe the background experience of the PI and other key personnel, outlining any key papers or results that might serve as the basis for the methods to be developed if the grant is funded. It is a good idea to list relevant publications—these will help demonstrate that you are well qualified to accomplish your research aims. You are not permitted to include papers that have not been accepted for publication.

The significance section will typically be 3–5 pages long.

Innovation: In this section, you explain the novel aspects of your proposed research. The novelty may be in the aims, themselves, or they may be in the details of the approach you will be taking. It also may be because sophisticated statistical approaches have not been applied to data of this type before. Since innovation is an aspect of the proposal that can be scored, it is important that the reviewers understand where the novelty is in your proposed research. It may be helpful to list the novel aspects of each aim and sub-aim explicitly.

Approach: This section is where you describe in detail what you want to do and how you are going to do it. To the extent possible, without sacrificing coherency, the approach section should not overlap with the significance section. As you write this section, ask yourself whether this material should be moved into the significance section if you find yourself starting to justify why the methods are important.

Using the same numbering system as used in your previous sections to denote aims and sub-aims, the approach section should immediately start laying

out the details of your proposed research. This might include how the models will be formulated, the estimation method or algorithm that will be used, how variances will be calculated, how you will evaluate your ideas, or to what alternatives it will be compared. If you propose to undertake theoretical proofs or simulation studies, a brief outline of how you will go about that should be included. It may be a good idea to identify possible pitfalls and how you will address them if they arise.

Many applications will have a software development and dissemination plan, so some detail of the language you will use and how it will be disseminated should be given. The target users of your software should be clear (e.g., other statisticians, health practitioners and other scientists) and your dissemination plan should be appropriate for this group.

Many people find that a good strategy is to provide a more detailed description for the first few specific aims and sub-aims (perhaps the strongest ones), then have only the broad steps outlined for the others. Reviewers understand some aims will be better developed than others will. It is usually a good idea to describe your strongest aims first, while retaining a logical flow.

The number of pages available to describe details of your approach for all your aims is quite limited. Recent changes in the review criteria for grant applications place more emphasis on the impact and significance of your proposed research, and less on the details of how you are going to achieve it. Thus, you will have to choose carefully what details to show. Providing excessive detail on background material or algebraic derivations is probably not helpful or necessary.

Maintaining a clear, simple writing style throughout the proposal is an essential ingredient for success. As you write, keep in mind

the goal of making the application as easy as possible for reviewers to understand and appreciate. While the importance of clear writing cannot be overemphasized, the most important determinant of success will be the nature of the proposed research, itself.

There is a fine line to walk in deciding on your general focus and specific aims. On the one hand, you want to demonstrate creativity by tackling unusual or nonstandard problems. On the other, you want to tackle problems you can realistically solve, given your background and expertise. In general, it is a good idea to write a grant application on a topic with which you are very familiar. If you are not confident that an idea is a good one, don't include it as a major aim. Tackling methodological problems that arise from consulting or project work is often an ideal solution, provided the methodology has broader applicability than just that project. Reviewers will generally have a favorable impression of a proposal that demonstrates a good knowledge of the underlying scientific context and questions. Balancing theory and application is generally important. While it is good to propose research problems that are statistically interesting and innovative, reviewers will not be convinced of their importance unless you also can argue for the practical importance of what you are proposing to do.

A common problem with statistical methods applications is that they provide a narrative of a research area, describing the issues and general approach that will be taken, but they lack a clear explanation of what the investigators will actually do during the period of the grant. You should not assume the reviewers have as much expertise or in-depth knowledge as you in the focus of your grant application. A clear distinction between what has already been developed and

what you plan to do with grant is likely to improve your review.

The approach section also should include a brief timeline that describes in which years of the grant each aim and sub-aim will be worked on.

The investigators are an important review criterion. The group of investigators will include the PI; co-investigators; and potentially graduate students, post-docs, research assistants, programmers, and consultants. Who is included and for what amount of effort should be driven by the needs of the research. For each of the key personnel, the grant application will include a biosketch. This document is limited to four pages and shows the person's education, positions held, awards and honors, publications, other grants that support them, and a personal statement describing their expertise relevant to the grant and the role they will play in the research.

The recommended limit for the number of publications is 15. These publications should be selected carefully and focus on those that are more recent and more relevant to the research. This is particularly important for the PI, who needs to demonstrate to the review committee that they are an active researcher and have the specialized expertise needed to complete the proposed research successfully. The list of publications also can help highlight that the members of the research team have successfully collaborated before.

The personal statements are also an opportunity to demonstrate that the investigators are well suited to make the research successful through their role in the proposed research.

It can be useful to include letters of support with your grant application. If your proposed research is focused on a particular application, including a letter from the person who will

provide or "owns" that data will be important. This solidifies that you really do have access to the data and increases the likely impact of your work.

Budget

You should start thinking about budget well ahead of the submission due date. Most departments will have a financial administrator who can help you prepare the needed numbers and documentation. You will need to think about the percent effort you wish to devote to the grant, yourself, along with the percent efforts of any co-investigators, associated computing and other expenses, the grant start date, and its duration. These decisions help determine the "direct costs," for your application.

Your grants administrator will then figure out the "indirect costs," which are generally a percentage of the direct costs that go to your school or research institution to help pay for the resources you need to do your work (e.g., your office, heat, administration, etc).

Mid-level and senior investigators typically apply for 10–30% annual effort for themselves for a 3–4-year period. Faculty who are paid on a nine-month basis might ask for summer salary. While some applicants request five years of funding, there is a certain risk in doing so, since the proposed research agenda will need to be particularly strong to justify such a long period of support.

It is common to request funds for one or two statistical co-investigators (say at 20% effort), along with a postdoctoral fellow and/or a graduate student. Sometimes, it is a good idea to include a subject matter collaborator for a small percent effort, especially if your proposal is strongly grounded in applications. The appropriateness and amount of effort will depend on the details of the research, role of the collaborator, and maybe the type of grant mechanism.

For example, a proposal focused on statistical methods for cancer clinical trials might include as a co-investigator an oncologist who would provide data and subject matter advice, with 5% effort allocated. More junior investigators, particularly those applying for their first grant, will typically ask for less in terms of postdoc or student support, but usually request a larger proportion of their own salary (40–50% is common for first-time applicants).

Preparing a budget for an NIH grant application is usually relatively simple. R03 and R21 have fixed direct cost budget totals. R01s will nearly always be "modular grants." Basically, any grant application with a total direct cost of less than \$250,000 per year can use the "modular grant" format. This means you do not have to provide many details about the budget and funds can be requested in increments of \$25,000. A typical, basic statistical methods grant will have an annual direct cost of \$150,000–\$200,000. More complex interdisciplinary grants involving medical co-investigators or multiple co-investigators will generally be more expensive.

People sometimes ask for consultant expenses. Usually, this will be a relatively modest amount (less than \$5,000), which will enable you to invite a colleague to visit you and work on one of the specific aims outlined in your proposal. As indicated above, reviewers often like to see the involvement of a consultant who is a subject matter specialist.

Your NIH budget can be used to purchase needed equipment. For most statisticians, this means computers. It is reasonable for your budget to include modest funds for "supplies," as well as travel funds for yourself and perhaps one co-investigator to attend one meeting each year. Once again, submitting a

modular grant has the major advantage that you don't need to provide a detailed budget justification, but instead outline it in broad terms.

While you do not have to provide dollar amounts for each investigator, there is a section called personnel justification. This section lists the number of calendar months each person will devote to the research each year. It is important that the level of personnel support requested be commensurate with the proposed research agenda. This section also should show in which aims each person will be involved and what their role will be. If the application includes students, post-docs, or research assistants, you should indicate who would supervise them.

The NIH Review Process

How does the review process work? For many years, most biostatistical grant applications were reviewed in a so-called "special study section" that focused on statistical methods grants. About 15 years ago, the Center for Scientific Review undertook a major reorganization of its study sections. One goal of the reorganization was to reduce the number of narrowly focused study sections and streamline the review process to reflect the increasingly interdisciplinary nature of biomedical research more effectively. Because the number of biostatistical grants submitted does not warrant the establishment of its own study section, it was decided that biostatistical grants would be reviewed in the Social Sciences, Nursing, Epidemiology, and Methods [SNEM-5] Study Section.

About nine years ago, the Center for Scientific Review deemed there were sufficient biostatistical grant applications and established the Biostatistical Methods and Research Design (BMRD) Study Section. The NIH website gives the

description of the types of research BMRD reviews as follows:

The Biostatistical Methods and Research Design (BMRD) Study Section reviews applications which seek to advance statistical and mathematical techniques and technologies applicable to the experimental design and analysis of data in biomedical, behavioral, and social science research. Emphasis is on quantitative methods to aid in the design, analysis, and interpretation of clinical, genomic, and population-based research studies. This includes analytic software development, novel applications, and secondary data analyses utilizing existing database resources.

The specific topics are the following:

- High-dimensional data methods such as those arising from genomic technologies, proteomics, sequencing, and imaging studies; development and applications of methods for data mining; statistical innovation in decision support, statistical machine learning, Bayesian networks, neural networks and outcome prediction; statistical methods for high-throughput data; biomarker identification
- Novel analyses of existing data sets: Innovative application of existing or development of new statistical and computational methodologies; application of methods in substantially new areas of application; innovative, non-routine data analysis strategies including combinations of existing methods rather than de novo development of new methods; development and evaluation of novel analytic tools to address new questions within existing data sets

- Research design: Development and innovative application of randomized trial designs; adaptive designs; sample size determination; design issues for experimental and observational studies; methods to improve study design efficiencies; methods for survey sample design; methods for comparative effectiveness studies
- Data collection and measurement: Development and adaptation of methods to estimate and improve data precision, reliability, and validity; methods to estimate and adjust for bias, measurement error, confounding, sampling and nonsampling error; psychometric methods
- Data analysis and modeling: Development of statistical theory, analytic methods and models, computational tools, and algorithms for the analysis and interpretation of data from clinical studies, randomized trials, observational studies, epidemiological studies, human genetic association studies, environmental studies, complex surveys, large databases, and registries; methods to handle data features and anomalies such as correlation, clustering, and missing data; risk prediction and forecasting methods; causal modeling

Tomas Drgon is the scientific review officer (SRO) for BMRD. The role of the SRO is to organize the review of the submitted grants, assign the reviewers, and be the contact person for applicants regarding the review process.

Although most statistics grant applications are reviewed in BMRD, there are other specialized study sections in which statistics grants can be reviewed. For example, grants focused on statistical methods for AIDS research might be reviewed at the AIDS Clinical

Studies and Epidemiology Study Section (ACE).

The permanent members of the BMRD study section, who have terms of 4–6 years, are mainly statisticians and biostatisticians who have NIH grant funding. Permanent members come from different regions of the United States and are selected by the SRO. As a group, they will have a broad range of expertise in statistical methodology and application areas. At each study section meeting, there may be temporary members who also review grants, depending on the number of submissions and particular topics for which expertise is needed.

Study sections generally meet three times a year to review proposals. Reviewers receive the packet of grant applications to be considered, along with specific assignments to review a subset (usually 8–10) in detail. Reviewers will need to declare themselves in conflict of interest for applications from anyone from their same institution or from any close colleague. Reviewers prepare a written critique of each assigned proposal.

Usually, each proposal will be assigned a primary, secondary, and tertiary reviewer. The written critiques from these three reviewers are available to the other study section members a few days before the meeting. Prior to the meeting, each assigned reviewer also posts a preliminary overall score and preliminary scores for each of the following five criteria: significance, investigators, innovation, approach, and environment. While all five criteria matter, their order of importance goes from most important to least important. When submitting a grant application, it is important to bear this order of importance in mind and help the reviewers understand (i) why your proposed research is significant, (ii) that the investigators have strengths relevant to the

proposed research, and (iii) that the work is innovative.

Significance: Is the work important? If successfully accomplished, will the proposed research have an important effect on biomedical science? The NIH website describes the assessment of significance as follows:

Does the project address an important problem or a critical barrier to progress in the field? If the aims of the project are achieved, how will scientific knowledge, technical capability, and/or clinical practice be improved? How will successful completion of the aims change the concepts, methods, technologies, treatments, services, or preventative interventions that drive this field?

Reviewers will be influenced by how well you have written your significance section in preparing this part of their report.

Investigator: Is the team of investigators well qualified to accomplish the proposed research? If early stage investigators or new investigators, or in the early stages of independent careers, do they have appropriate experience and training? If established, have they demonstrated an ongoing record of accomplishments that have advanced their field(s)? If the project is collaborative, do the investigators have complementary and integrated expertise? The reviewers will be paying close attention to the biosketch(es) and any preliminary results in your proposal.

The study section will understand that junior investigators are likely to have less of a record of accomplishment of research than more established investigators and make allowances for that in their review. They will, however, still need some track record of relevant research to convince the reviewers that they can successfully achieve the proposed research.

Innovation: Is the proposed work new? Is it creative? For innovation, the NIH website states the following:

Does the application challenge and seek to shift current research or clinical practice paradigms by utilizing novel theoretical concepts, approaches or methodologies, instrumentation, or interventions? Are the concepts, approaches or methodologies, instrumentation, or interventions novel to one field of research or novel in a broad sense? Is a refinement, improvement, or new application of theoretical concepts, approaches or methodologies, instrumentation, or interventions proposed?

Approach: Is the planned approach well reasoned, appropriate, and likely to lead to accomplishment of the specific aims? The reviewer will pay close attention to what you have outlined in your approach section.

Environment: Is the infrastructure at the institutions where the research will be undertaken appropriate for what is required? The reviewers will be looking at the resources page in the grant application to assess this. They also will consider any unique features of the scientific environment, subject populations, or collaborative arrangements.

Prior to the meeting, each of the assigned reviewers provides written critiques and a score for each of the five criteria. The critiques are in the form of bullet points and focus on the strengths and weaknesses of the proposal. The five scores are intended as a guide to the reviewer and help them arrive at the overall impact score. There is no formula for using criterion scores to calculate overall impact score. This is the score that matters. Each reviewer will write a paragraph on the overall impact of the proposed research.

The overall impact will be an assessment of the likelihood for the project to exert a sustained, powerful influence on the research field(s) involved, in consideration of the five review criteria.

At the study section meeting, each committee member gives their final overall impact score after the application is discussed, including issues related to human subjects, and the committee has a good understanding of the strengths and weaknesses of the application. The average of these scores (multiplied by 100) is what the applicant sees. They do not see the impact score from each reviewer.

Only after the application is scored is the budget discussed. The reviewers will assess whether the budget is reasonable relative to the work to be accomplished and whether the length of time requested is appropriate.

During the study section meeting, the applications are reviewed in batches. Roughly speaking, new investigators are in one batch, smaller grants are in another batch, and experienced investigators are in another batch. The preliminary scores from the three reviewers will be used to decide whether the application will be discussed. Approximately the top 50% of the applications in each batch are discussed.

A few days after the meeting, the final score will be made available online to the PI. Around 2–4 weeks later, the written critiques from the three reviewers are posted online for the PI to see. These critiques will be updated versions of the preliminary critiques prepared by the three reviewers. There also will be an overall summary of the discussion that highlights its main strengths and weaknesses and should provide the PI with an understanding of why the grant application received the score it did. The overall summary is written by the SRO.

The possible score for each component and the overall impact from each reviewer is an integer from 1–9, with 1 representing perfect. Despite efforts by the Center for Scientific Review to harmonize scores between different study sections, the typical scores do differ. Roughly speaking, scores of 1 and 2 are outstanding and scores of 7, 8, and 9 indicate substantial problems with that aspect of the application.

The overall impact scores are assigned a percentile. In BMRD, grants are percentiled based on scores received by other grants reviewed at BMRD in the current and two previous cycles. For R01 and most other grants, it is the percentile that is used to help determine the funding, whereas the institutes use a score for some other grants. The relationship between scores, percentiles, and funding decisions varies considerably by institute and grant mechanism, depending largely on budgetary issues specific to each institute and its individual funding priorities. Some institutes also have policies that favor new investigators and early stage investigators by applying a different threshold for funding for R01 grants.

The percentiling occurs for most study sections at NIH. There are two obvious, but often unrecognized, effects of this. One is that it does not make any difference to the number of grant applications scored in the fundable range if the study section is one that tends to give harshly worded reviews or more gently worded reviews. The other is that if a study section reviews a large number of applications, the absolute number of grants from that study section that will be in the fundable range is greater than for a study section that reviews a smaller number of applications.

The percentile necessary to gain funding also will vary over time, depending on the current economic situation. In lean times, an 8th percentile or less

would have a high chance of funding, regardless of institute. In plentiful times, percentiles less than the 20th will have a reasonable chance of funding.

After you receive your critiques, you can be cautiously optimistic if your percentile is in the top 8%. If you are in the range of 10th–20th percentile, you are in a “gray zone,” in which funding is uncertain. Sometimes an institute will fund a grant that is just above its funding cutoff in terms of percentile, if it is in an area of particularly high scientific priority. Percentiles higher than 25% will be funded rarely.

The process by which reviewers assign scores is hard to describe. In general, it is fair to say that people assign scores by keeping in mind these rough guidelines on how scores translate to funding decisions. If three reviewers all independently give similar scores, it is reassuring to the rest of the committee and the final score will generally be similar. If the three reviewers start out with different scores, then considerable discussion might be needed before the committee is comfortable voting on a particular application.

If your application is in the 10–25% range, you can still have some hope of funding, but should start to think about a resubmission. Proposals considered to fall into the lower half of those reviewed typically will be “not discussed” and no overall impact score given. If you get a bad score or your application is “not discussed” for your first submission, don’t despair. It happens to most people. Give yourself a week or two to get over your disappointment, and then start to evaluate your critiques carefully. Try to determine whether the reviewers think your proposal shows promise and can be fixed easily. Talking to a senior colleague can be helpful at this stage. Your program officer also may be able to give you advice.

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If you decide to fix the application and reapply, respond explicitly to each of the weaknesses in your critique, indicating how and where you have revised your application. This response should be laid out clearly in a section called “Introduction.” If you disagree with the reviewer on certain points, state your arguments in a logical manner, but avoid criticizing the reviewer—this tactic is likely to backfire on you! Add and point out any additional improvements. It can be useful to highlight revisions to the proposal, itself, by using a different font or italics. The more you can convince reviewers you have responded thoroughly and thoughtfully to the previous critique, the greater your chance of success on your resubmission.

Note that you will only have one opportunity to resubmit your grant. If you wish to apply for NIH funding for this line of research after that, you will have to make substantial modifications to the aims of your grant application so it can be considered as a new proposal.

How grant applications are reviewed and funding decisions are made at the NIH is a complex process. Much effort goes into thinking about how it should be organized and conducted to be objective and fair and in such a way that enhances the mission of the NIH. No applicant can be expected to understand all the intricacies of the system. If you are not funded, you can console yourself by recognizing you are part of the majority and understanding that the system will hopefully enable you to have a better chance at funding for your next application.

The grant review process has some similarities to the review of an article submitted to a journal; however, there are important differences. If the editor invites you to revise and resubmit a paper, the referees’ reports are usually fairly clear about what needs to be done to make the paper acceptable for publication. If you successfully do those things, there is a good chance the paper will be accepted. For a resubmission of a grant, the critiques you received are an evaluation of the original submission’s strengths and weaknesses; they are unlikely to include specific suggestions about how to make the grant application better.

Another difference concerns the review of resubmissions. It is likely that one, if not two, of the main reviewers will not have been reviewers for your original submission. While they will see the original critiques and your response to them, they are expected to use their expertise to assess the strengths and weaknesses of the new application, including the possibility of identifying different strengths and weaknesses than were noted for the original submission.

Conclusions

Writing a grant application sounds like a lot of work, and it is. However, even if your grant is not

successful the first time, the effort is not wasted. Many describe the experience of grant writing as positive. It is an opportunity to think through your research priorities and focus your thoughts. For many researchers, writing the grant is integral to doing the research.

You can even think of a grant application as a compilation of a series of half-written papers. The significance section contains the introductions to the various papers, while the approach section contains an incomplete draft of the main results of the papers.

Winning your first RO1 grant can be the first step in a long-term, satisfying relationship with the NIH. So long as you accomplish your aims, publish your work, and generate new ideas for each successive renewal, there is no reason why your RO1 grant can’t stay with you throughout your career. During your earlier years, you might be the one doing all the calculations and programming needed to work out the problems outlined in your proposal. As you become more senior, the problems can be shared with your students and junior colleagues. Eventually, you will be guiding fresh new investigators applying for their own grants.

I want to emphasize the importance of the BMRD study section to our profession. BMRD is the only study section devoted to statistical methodology, hence every application reviewed by BMRD will be assessed by statisticians and every funded grant reviewed by BMRD is a statistical grant. The percentiling system means that the more grant applications reviewed by BMRD, the more that will be in the fundable range. In the recent past, BMRD has not been reviewing as many applications as most other study sections, leading observers to question the need for it. So, I hope this article will be helpful to you in putting together an NIH grant application and requesting in your cover letter that it be reviewed by BMRD. ■

MASTER'S NOTEBOOK

Not Everything That Counts Can Be Counted

Jean V. Adams, U.S. Geological Survey - Great Lakes Science Center and Great Lakes Fishery Commission

“I can’t *not* write,” a friend once told me. She was a full-time student and had never earned a dollar from writing. Nonetheless, she was a writer in the truest sense of the word. I wondered what it felt like to be an artist filled with such passion.

Although math was always my favorite subject in high school, I studied zoology in college, hoping for a job that would let me spend time outdoors. I ended up working in a laboratory processing samples collected by field biologists. Each biologist had a particular focus. Each was an expert in his or her chosen field. Their passion was evident, but not contagious. I wondered what it must feel like to be a scientist driven by such focus.

Then, I met the statistician who worked with these biologists. Everything about his job appealed to me. He spent time on a variety of projects, rather than focusing on just one. He tried to answer questions by searching for patterns in data. He used math as part of his job. He even spent time out in the field with the biologists. It sounded like a perfect fit for me. I went back to school for a master’s degree in statistics and everything fell into place. I had discovered my passion.

Have you found your passion yet? If not, keep looking. It’s in you, somewhere, itching to grow. Really.

People

Humans. They’re a strange bunch. Incredibly varied and unbelievably complicated. Like it or not, these creatures will play a huge role in your life and in your career. Anything you can do to understand them better, do it. In school? Take a psychology course. On the job? Take a management course on personality types or communication skills. Been there done that? Please. Don’t make me laugh. When it comes to human nature, there’s always room to learn more.

Connect with the people around you. Consciously put yourself in situations in which you will interact with the members of your community, be it at school or work. Is someone approaching you in the hallway? Look him in the eye and say hello. Is your room or office located at the far end of the building, near a remote entrance? Make a habit of entering the building at the main entrance. Is there

a group that goes bowling every Friday? Go with them. Have a question for a colleague down the hall? Ask her in person. Is there a brown bag group that eats in the break room? Eat with them. Think of it as an optimization problem. You want to maximize your daily face time.

Unless you are gregarious by nature, these suggestions may take you a bit out of your comfort zone. That makes it all the more important. And it’s okay to experience some discomfort. You will get better with practice. And let me tell you a secret. Connecting with the people around you will do wonders for your career. It will open doors; it will bring you joy. It will reward you with an intangible quality that no one verbalizes, but everyone perceives.

Find your passion. Connect with people. That’s my recipe for a long and happy career. ■

Biopharmaceutical Symposium to Offer Tutorials, Short Courses

The 20th anniversary meeting of the Biopharmaceutical Applied Statistics Symposium (BASS XX) will be held November 4–7 at the Double Tree (by Hilton) Hotel in downtown Orlando, Florida.

At least 16 one-hour tutorials on diverse topics pertinent to the research, clinical development, and regulation of pharmaceuticals will be presented by speakers from academia, the pharmaceutical industry, and the Food and Drug Administration (FDA).

Two parallel one-day short courses will be presented November 6–7, and the keynote address will take place on November 5, with a reception following. The FDA biometrics session will be the morning of November 6.

BASS is a nonprofit entity, sponsored by the department of biostatistics at Virginia Commonwealth University and the Jiann-Ping Hsu College of Public Health at Georgia Southern University. Its purpose is to raise funds for graduate fellowships in biostatistics.

To date, 50 graduate students have been supported by funds raised by BASS.

For more information, visit www.bassconference.org, contact the BASS registrar at rewhitworth@georgiasouthern.edu, or contact Karl E. Peace at (912) 478-7905 or peacekarl@frontier.com.

STATtr@k

Turn Off the TV and Volunteer at the ASA

Janet Buckingham, Southwest Research Institute



One of the most active committees I served on was the Advisory Committee on Continuing Education. This committee helps organize the Continuing Education courses at JSM and interfaces with the ASA Center for Statistical Education. Needless to say, this committee is always active. We all had plenty to keep us busy while we looked for ways to improve the courses and help the presenters provide a good experience for ASA members.

The ASA is full of talented people who are eager to help you find the right place for your skills and talent. Everyone has something to give, everyone has something to share, and everyone has something to learn. So, turn off the TV, get off the couch, and volunteer!

The concept of volunteering is in vogue again. People volunteer or give back in all sorts of ways—United Way, Boy/Girl Scouts, helping the disadvantaged/homeless/hungry, church organizations, and other community service areas. But have you ever thought about how you can volunteer for a professional organization, such as the ASA?

Are you a student or young professional just getting started

in your career as a statistician? Volunteer opportunities within the ASA are just as diverse as the reality and game shows on TV. Based on my experience, I will share insights and tips to help you surf to the right channel of volunteerism.

Odds Are in Your Favor

Join a Chapter. This is a great place to start volunteering if you happen to be near one of the 72 ASA chapters located around the country. This is how I first became involved in the ASA. I joined the San Antonio Chapter and quickly began helping to develop our local newsletter (this is a great way to meet the chapter officers and other chapter members). I met several local statisticians who gave talks on the work they were doing.

Chapter dues are typically very low, \$1.00 or *free* for students. Chapters have a variety of activities you can easily pursue—help with chapter meetings, become a webmaster or Council of Chapters traveling course coordinator, judge a science fair, or mentor at a school. Two projects sponsored by the ASA that your chapter can become involved in include the Poster Competition and Project Competition for grades K–12 (www.amstat.org/education/posterprojects) and the U.S. Census at School Program for grades 4–12 (www.amstat.org/censusatschool).

Look for an ASA Committee. There are more than 50 committees within the ASA that cover a broad range of activities. Most are organized within four councils of the ASA—Awards Council, Education Council, Membership

Council, and Professional Issues and Visibility Council.

Committees typically consist of six to nine members, each serving three-year rotating terms. There are different levels of commitment and service for each committee, and it is a great way to help the ASA in an area of interest to you. All committee members are appointed by the ASA president-elect.

I suggest you look through the committees listed on the ASA website (www.amstat.org/committees/committeelist.cfm), read their charge of activities and goals, and click the link to volunteer or recommend a colleague for service on a committee if you find one of interest to you. Be sure to indicate the experience you have that would be relevant to the committee or any other comments about why you would like to serve.

Perhaps you have an interest in an education area, career development, ASA membership, law and justice statistics, or professional ethics. All of these areas are important to the ASA as a profession. So, dial in to the ASA website and see what committees spark your interest.

Search for a Section. Just like searching for contestants on the Next Food Network Star, looking for a section could be as simple as defining your favorite ingredient. What are your statistical interests? With 25 ASA sections covering more than 20 sub-disciplines, you are sure to find a section that fits the recipe.

Any ASA member can join a section; they are not related to a particular geographic region. Most sections hold business

meetings at JSM every year, but all are busy throughout the year working on areas/activities to serve their members. How can you volunteer in a section? Sections look for ways to grow their membership—publish a newsletter, maintain a webpage, organize best presentation/poster awards at JSM, develop webinar series, organize contributed and invited sessions at JSM, elect officers, and help students with travel awards or paper competitions. Many sections sponsor short courses or other educational activities.

Getting involved with a section was one of the best ways I found to volunteer within the ASA. It has helped me network with other colleagues throughout the country who share the same statistical interests. Yearly section dues are typically < \$10, and you can join a new section for the first year free!

Connect with an Outreach Group. Outreach groups involve members who have common interests that are not in the traditional chapter or section structures. Currently, the ASA has four outreach groups: (1) Caucus of Academic Representatives, (2) Friends of Australasia, (3) Statistics Without Borders, and (4) Isolated Statisticians.

Statistics Without Borders provides pro bono statistical consulting and assistance to organizations and government agencies in support of these organizations' not-for-profit efforts to deal with international health issues (e.g., the earthquake impact on Haiti). Isolated Statisticians consists of academic statisticians who discuss statistical issues with one another because they may be the only statistician within their own educational environment. If you happen to be a young professor within a small department, this group may be beneficial to you.

All of the outreach groups are described on the ASA website at www.amstat.org/outreachgroups.

Find, Be a Mentor

If you are a student or young professional, it would be wise to seek out someone to be your mentor. If you want to become more involved in the ASA, then find someone already involved in the ASA who can answer your questions and guide you through the myriad volunteer opportunities to maximize your service. Maybe someone within your school or organization is perfect in this role.

You also can be a mentor to others. If you are already involved in the ASA, then seek out young statisticians in your chapter, sections, or committees and help them find their niche. ASA Past President Nancy Geller wrote in her June 2011 President's Corner

column, "You're never too old or too experienced to look for new role models. And you're never too young to be a role model for someone else."

Benefits

The weakest link in your career development may be *you*. What can volunteering do for you? It can give you the opportunity to practice important skills used in the workplace such as teamwork, project planning, organization, and communicating. You develop a network of statisticians with similar interests. What can it do for others? They can learn from your skills and knowledge. All these opportunities are good for your professional development. I have made lifelong contacts with statisticians I have worked with on committees, chapters, and sections. ■



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Mosteller



Martin



Deming

On the occasion of this International Year of Statistics, and in anticipation of the 175th anniversary of the ASA in 2014, I offer a list of 20 past ASA members who were influential in bringing us to this point in our history.

No doubt others' lists would differ and many excellent people have been omitted. Some of these (e.g., R. A. Fisher and Karl Pearson) were never members;

others (e.g., Abraham Wald and Jimmie Savage) have influenced the profession greatly without playing a significant role in the ASA.

The list could have been extended with no drop in quality. Hard choices were made to give a list representative of the past membership at its finest; long service to ASA was not sufficient for inclusion. The only rigidly enforced rule was that the

member be deceased—no one can complain personally that they were unfairly omitted.

The order of the names is haphazard. Twelve served as presidents of the ASA; the numbers in parentheses are the years of their presidency.

Adolphe Quetelet, Belgian, founder of the International Statistical Congresses. Played a direct role in starting the Royal Statistical Society, and by agreeing to be its first foreign member, he helped the ASA gain international recognition.

Frederick Mosteller (1967), founding chair at Harvard and statesman of statistics.

George Snedecor (1948), founder of the statistical laboratory at Iowa State.

Jerzy Neyman, founder of the statistics department at the University of California at Berkeley and pioneer in mathematical statistics.

Joseph Berkson, biostatistician at the Mayo Clinic and iconoclast (and co-founder of the Society for Stomping on Berkson). Introduced "logit" analysis.

Raymond Pearl (1939), path-breaking biometrician. Studied longevity and nutrition.

Francis Amasa Walker (1883–1896), director of the 1870 U.S. Census. Brought the ASA from a regional discussion club to a national professional society. Established *JASA* and, in 1896, moved the annual meeting from Boston.

William Kruskal (1982), co-inventor of the Kruskal-Wallis Test, consummate scholar of statistics, editor of encyclopedias.

John Tukey, from his exploratory and confirmatory data analysis to statistical graphics to his terminology (e.g., jackknife and software), he helped shape modern statistical analysis.

W. Allen Wallis (1965), ran the Statistical Research Group at Columbia University during WWII, editor of *JASA* from 1950–1960, founder of The University of Chicago Statistics Department, undersecretary of state 1985–1989, co-inventor of the Kruskal-Wallis Test.

Herman Hollerith, devised the punch card system that revolutionized the tabulation of the U.S. Census in 1890 and led to the creation of IBM Corp.

W. Edwards Deming, a tireless educator outside the academy, he brought sampling to government, quality assurance to industry, and statistical methods to the military.

Helen Walker (1944), author of an excellent history of statistical methods published in 1929, influential educator who taught at Teachers College of Columbia University.

Edwin B. Wilson (1929), polymath who published on binomial confidence intervals in 1927. Served as co-president of MIT in 1921 before founding the Harvard program in vital statistics and served as secretary of the National Academy of Sciences for 50 years.

William G. Cochran (1953), influential author of books on the design of experiments and sampling; important educator at Iowa State, The Johns Hopkins University, and Harvard.

Gertrude Cox (1956), founded the statistics department at North Carolina State University. Played a key role in starting the departments of

statistics and biostatistics at The University of North Carolina.

Albert H. Bowker (1964), founding chair of the Stanford statistics department and, later, chancellor of CUNY and the University of California.

Margaret Martin (1980), helped develop the Current Population Survey. Helped direct several federal statistical offices, from the Bureau of the Budget to the National Academy of Sciences.

Paul Meier, biostatistician and co-inventor of the Kaplan-Meier estimator of survival curves; that paper (in *JASA*) has been the most-cited paper in statistics.

Harold Hotelling, founder of the programs at Columbia and The University of North Carolina, pioneer in multivariate analysis and resource economics. ■

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University of Limpopo to Commemorate Statistics2013 as Host of SASA

Maseka Lesaoana, Local Organizing Chair

The South African Statistical Association (SASA, www.sastat.org.za) recently announced that the University of Limpopo will host its 2013 national conference, SASA 2013, November 4–8.

The 2013 conference marks the association's 60th anniversary. The annual conference is an important component in the efforts of SASA to achieve its mission of facilitating the advancement of statistical knowledge and promoting applications of statistical theory in all spheres of life, hence contributing positively to the development of South Africa.

Hosting this conference, which is the premier statistics conference in South Africa, is both an honor and opportunity for the University of Limpopo. Various highly respected universities and research councils in South Africa—at times in collaboration with industry—have taken turns hosting the conference. In addition to participants from all over South Africa, the conference is expected to attract attendees from Mozambique, Zimbabwe, Namibia, Botswana, Angola, Tanzania, Madagascar, Swaziland, Lesotho, Kenya, Zambia, and Uganda.

A Brief History of the SASA

The first president of SASA was Barend de Loor (1953–1956), a founding member of the association. The link between SASA and industry and the global world can be traced to its inception and de Loor's positions on both the Statistics Council and various advisory committees of the Council for Scientific Industrial Research.

From its inception, SASA established connections with the international statistics community, enjoying long-term relationships with colleagues and societies in The Netherlands, United Kingdom, Germany, New Zealand, United States, Spain, Dubai, Italy, Belgium, and Switzerland.

SASA 2013 and the University of Limpopo—Establishing New Partnerships

2013 marks the first time a historically disadvantaged university will host a SASA conference. The conference will enhance the quality of learning for the University of Limpopo's students and help

establish further collaborative work with other institutions of higher learning and industry. The faculty of the university already work in close collaboration with colleagues and institutions from several other African countries, including Zimbabwe, Botswana, Kenya, Uganda, and Zambia.

The university's partnerships extend beyond the African continent, however. It is associated with James Cochran of Louisiana Tech University, Michael Noble of the University of Oxford, UK, Santosh Kumar of the University of Melbourne, Australia, Ray Chambers of the University of Wollongong, Australia. The university's long association with Cochran and Kumar have contributed substantially toward increased research output and postgraduate throughput in the University of Limpopo.

SASA 2013 and Statistics2013

SASA 2013 gives the University of Limpopo and the South African Statistical Association the perfect opportunity to observe the International Year of Statistics and increase the public's awareness of the powerful and far-reaching effects the statistics discipline has on everyone. Three activities SASA is undertaking include participating in appropriate processes and structures that affect South African society; being accessible to, and supportive of, the users of statistics in the broader community; and actively cooperating with organizations and societies associated with disciplines that are broadly related to statistics. The SASA 2013 theme, "The Power of Statistics on Society," supports the objectives of both SASA and Statistics2013.

Public promotion of SASA 2013, its plenary speakers, and several sessions with great potential public appeal will increase the public's mindfulness of the impact of statistics on all aspects of society; however, the conference also will emphasize nurturing statistics as a profession among young people.

In addition to giving a plenary talk, Cochran will organize and chair the first SASA doctoral colloquium. This colloquium is designed to help students successfully make the transition from student to academician or practitioner with minimal difficulty, as well as to encourage doctoral students to take on research projects with the potential to strongly affect society.

For more information about SASA 2013, email SASA2013@ul.ac.za. ■

USCOTS Features Blend of Workshop Opportunities

The United States Conference on Teaching Statistics (USCOTS) will be held May 16–18 at the Embassy Suites Hotel & Conference Center in Raleigh-Durham, North Carolina. USCOTS '13 begins on Thursday evening with a reception and opening session featuring a series of five-minute presentations on the conference theme, “Making Change Happen.”

This conference is designed to model good teaching in its sessions, social activities, and hallways. As with previous USCOTS, it will consist of plenary sessions, hands-on breakout sessions, and “poster and beyond” sessions for participants to share and demonstrate their own teaching and learning innovations. The conference banquet, hosted by SAS on their nearby campus, will feature statistical “edutainment.” This is a fun, interactive conference at which you will have the opportunity to meet other statistics teachers from a wide range of institutions.

In keeping with the conference theme, an extensive list of pre-conference workshops, as well as a post-conference grant-writing workshop, will allow statistics educators to delve deeper into ideas for making change happen. There is no registration fee to attend any of the workshops, which vary in length between a half day and three days. Workshop times have been scheduled to allow participants to attend up to three, one from each category. Advance registration is required.

1–3-Day Workshops

- Teaching with R by Danny Kaplan of Macalester College, Nick Horton of Smith College, and Randy Pruijm of Calvin College
- Identifying and Addressing Difficult Concepts for Students in the Introductory Statistics Course by Deborah Rumsey of The Ohio State University and Marjorie Bond of Monmouth College
- Interactive Probability Instruction by Dennis Pearl of The Ohio State University, Kyle Siegrist of the University of Alabama, and Ivo Dinov of the University of California at Los Angeles
- Teaching the Statistical Investigation Process with Randomization-Based Inference by Nathan Tintle of Dordt College;



Beth Chance, Allan Rossman, and Soma Roy of Cal Poly - San Luis Obispo; Todd Swanson and Jill VanderStoep of Hope College; and George Cobb of Mount Holyoke College

- Implementing Discovery Projects in Elementary Statistics by Dianna Spence of North Georgia College and State University
- Playing Games with a Purpose: A New Approach to Teaching and Learning Statistics by Shonda Kuiper of Grinnell College and Rod Sturdivant of West Point Military Academy

Mini-Workshops

- How to Implement a Randomization-Based Introductory Statistics Course: The CATALST Curriculum by Bob delMas of the University of Minnesota
- Innovation in Online Instruction in Statistics: Engaging and Challenging e-Learners by Michelle Everson of the University of Minnesota
- Teaching Statistical Concepts Using Dynamic Visualization and Bootstrapping in JMP by Mia Stephens of SAS Institute, JMP Division

Post-USCOTS Grant-Writing Mini-Workshop

- Grant Writing by Lee Zia, Program Director for the NSDL, STEP, and TUES programs at the National Science Foundation

Workshop abstracts and details on availability of support for lodging can be found at www.causeweb.org/uscots/workshop. Details about the conference can be found at www.causeweb.org/uscots. ■

The National Institute of Statistical Sciences (NISS) elected **Mary Batcher** and **Robert Rodriguez** to the board of trustees for three-year terms beginning July 1. **Karen Kafadar** and **Fritz Scheuren** also were elected for a second three-year term beginning July 1.

Tim Hesterberg will complete the term of long-time trustee **Mary Ellen Bock**, who resigned from the board. The board of trustees approved the slate at its 2012 annual meeting, which was held November 2–3, 2012, in Research Triangle Park, North Carolina.

Batcher is executive director of quantitative economics and statistics at Ernst & Young LLP, in Washington, DC. She is responsible for all aspects of statistical sampling used in tax filings, including the technical merits of firm samples, review of IRS proposed samples, and review of samples developed by other firms for our audit clients.

Rodriguez is senior director of R&D for SAS Institute, in Cary, North Carolina. He has long been active with the NISS affiliates program, of which SAS is an original member. Rodriguez has been with SAS Institute since 1983, after spending six years as staff research scientist at General Motors. He also served as ASA president in 2012.

Hesterberg has worked at Google since 2008 as a senior ads quality statistician. Previously, he was senior research scientist at Insightful Corp., assistant professor at Franklin and Marshall College, and operations research analyst at Pacific Gas & Electric Co.

During its reception and dinner, the board also recognized Alan Karr, director of NISS, for

his 20-and-counting years at NISS. ■

The winners of the Islamic Countries Society of Statistical Sciences (ISOSS) Gold Medal for Outstanding Contributions to Statistics in Islamic Countries are Dato' Wira, Jamil Bin Osman, Saleh Omer Badahdah, and Ayman Bakleezi of Qatar University.

The awards were presented at the biennial Islamic Countries Conference on Statistical Sciences at the Qatar University, which took place December 19–22, 2012.

The keynotes at ISOSS were delivered by Munir Ahmed, Edward Wegman, Ehsan Soofi, Mohammad Hanif Mian, Abdelhameed El-Shaarawi, Aman Ullah, Shahjahan Khan, and Mohammad Al Saleh.

Conference delegates re-elected Ali S. Hadi of the University in Cairo, Egypt, as the ISOSS president.

As with previous ISOSS conferences, the electronic version of the proceedings is accessible from the ISOSS website at www.isoss.net. ■

At its recent International Conference on Statistics, Science, and Society in Chennai, India, the International Indian Statistical Association (IISA) announced the winners of its young researcher awards for 2012–2013.

The Theory and Methods Award went to **Sourav Chatterjee**, associate professor of mathematics at the Courant Institute of Mathematical Sciences of New York University.

The Applications Award went to **Sudipto Banerjee**, professor of biostatistics in the school of public health at the University of Minnesota.

These awards are co-sponsored by IISA and Elsevier. For information about IISA, visit their website at www.intindstat.org. ■

The Bangladesh Statistical Association (BSA) recently recognized the scientific contributions of Bangladeshi statistics professor **Shahjahan Khan** by awarding him the Q. M. Hossain Gold Medal. Kahn is professor of statistics in the department of mathematics and computing at the University of Southern Queensland, Australia, and served as president of Islamic Countries Society of Statistical Sciences from 2005–2011.

Finance Minister Abul Maal Abdul Muhith presented the award to Khan at an international statistics conference organized by the BSA at the Senate Building of the University of Dhaka.

The award was given in recognition of Khan's outstanding fundamental research, world-class international professional leadership, and organization of many international conferences, including the Islamic Countries Society of Statistical Sciences.

Kahn is the youngest to receive the award, which was established in 1990. ■

Stefano Castruccio, a PhD candidate in the department of statistics at The University of Chicago, won first place in the 2012 Environmental Statistics Student Paper Competition for his entry, "Global Space-Time Models for Climate Ensembles," co-authored with Michael Stein, a professor at The University of Chicago. The student paper competition/travel award, sponsored by the American Statistical Association, gives students the opportunity to attend and present their paper at the annual Joint Statistical Meetings in August.

Castruccio's paper, which develops a statistical model for analyzing climate models, is part

Read about your colleagues and friends in the news. Go to www.amstat.org and click on "Statisticians in the News."

Obituary

Daniel O'Haver Price



Daniel O'Haver Price was born on a farm in Palatka, Florida, on September 12, 1918, the second son of Charles Henry and Lillian O'Haver Price. He graduated from Putnam High School in 1935 and earned a BS from Florida Southern College in 1939. He taught high-school science in Bartow, Florida, before

going to graduate school in 1940. He earned his MA in 1942 and PhD in 1948, both from The University of North Carolina at Chapel Hill.

At the end of his active naval duty, Price married Doris Carter on June 23, 1945. He became a full professor in 1951 and continued at Chapel Hill from 1957–1966 as director of the university's Institute for Research in Social Science. He was a visiting professor at Harvard University (1950) and the Massachusetts Institute of Technology (1957). During 1963–1964, he was a Fellow at the Center for Advanced Study in the Behavioral Sciences at Stanford University. He moved to The University of Texas at Austin in 1966; for four of his 12 years there, he was chair of the sociology department. In 1978, he went to UNC Greensboro, where he was department head for 10 years. He retired in 1988 and moved to Jacksonville, where he married Marion Albinson Conner on June 5, 1988.

During World War II, Price was an electronics officer in the Navy, attached to PT Boat Squadron 17 in the Pacific, with service in Panama, Hawaii, Marshall Islands, New Guinea, and Mindoro. After the war, as a reservist, he taught courses in missile technology and consulted with the Naval Weapons Laboratory in Dahlgren, Virginia. He retired as a Captain from the Navy Reserves in 1978.

As a social statistician and demographer, Price authored or co-authored seven books and more than

50 technical papers in professional journals. These included *The 99th Hour*, a book that dealt with the now timely issue of limits to population growth; *Changing Characteristics of the Negro Population*, a description of changes in black population characteristics from 1870–1960; *An American Dependency Challenge*, the most extensive public welfare study of the 1960s; *When a City Closes Its Schools*, a survey of the impact of the 1958 closing of Norfolk's public schools to avoid integration; and *Statistics for Sociologists*, a standard textbook for several decades.

Early in his career (1959), Price became a Fellow of the American Statistical Association. His master's thesis, published in *Social Forces*, was the first article in the sociology literature using factor analysis. He was also a Fellow of the American Association for the Advancement of Science and the American Sociological Association. He was a consultant to many government agencies, including the U.S. Census Bureau, National Institute of Health, Social Security Administration, National Science Foundation, Office of Management and Budget, and Office of Economic Opportunity.

Price's second wife, Marion Conner Price (1918–2010), was a leading Jacksonville actress and television pioneer. His first wife, Doris Price (1921–2012), was the mother of his three children: Philip Price (polymer chemist in West Virginia), Karen Price (Boston University linguistics consultant), and Gary Price (Texas State Comptroller's Office). Grandchildren are Bradford Price of Washington, DC; Megan Price of San Francisco, California; David Price of New York, New York; Aaron Price of San Antonio, Texas; and Indigo Dow of Boston, Massachusetts. He is survived by a brother, Charles David Price of Winter Park.

Three of his grandchildren have shown mathematical inclination. Megan has a PhD in biostatistics; David was ranked as the top mathematics student in Texas and is now teaching in New York; and Aaron is at Trinity University and doing mathematical geoscience field work in Canada.

of his dissertation, which aims to provide geophysicists with statistical tools for better understanding climate change.

"Statistical models for global processes are a topic that was largely ignored by statisticians until about 10 years ago," says co-author Stein. "Part of what makes the problem hard is capturing how most global processes look very different at different latitudes."

"The paper by Castruccio and Stein addressed a major issue in environmetrics in that it focused on global climate modeling," said Medical University of South Carolina Professor Andrew Lawson, who chaired the selection committee. "Hence it scored highly from that viewpoint. It was also highly innovative and received most votes overall across relevance and innovation categories."

This work was motivated by the problem of providing fast approximations to the output of complex climate models as part of RDCEP, the Center for Robust Decision Making on Climate and Energy Policy, an NSF-supported partnership established by The University of Chicago with several universities and national laboratories. ■

Obituary

George Casella

Submitted by Ed George and Christian Robert

George Casella, a leading figure in the field of statistics, passed away on June 17, 2012, after a nine-year battle with multiple myeloma. He was 61.

George's influence on research and education in statistics was broad and profound. During his career, he published more than 200 articles in peer-reviewed journals, co-authored nine books, and mentored 48 MS and PhD students. His publications included high-impact contributions to Bayesian analysis, clustering, confidence estimation, empirical Bayes, frequentist decision theory, hypothesis testing, model selection, Monte Carlo methods, and ridge regression. Of his books, *Statistical Inference* (with Roger Berger) became the introduction of choice to mathematical statistics for vast numbers of graduate students; this is certainly the book that had the most impact on the community at large.

In 1996, George joined a legendary figure of statistics, Erich Lehmann, then at the University of California at Berkeley, to write a thorough revision of the classic *Theory of Point Estimation*, which Erich had written by himself in 1983. This collaboration resulted in a more modern, broader, and more profound book that continues to be a key reference for courses in mathematical statistics. (It is notable that the book review section of *CHANCE* 26(1) was dedicated to five of George's books.)

During his distinguished career on the faculties of Rutgers, Cornell, and the University of Florida, George was a key influence in driving research, teaching, and recruitments toward an ever-higher level of academic excellence. For instance, during his 19 years at Cornell—where he began as an assistant professor and finished as the Liberty Hyde Bailey Professor of Biological Statistics—he participated in the creation of the division of statistics and became one of the pillars of the statistics community(ies) on the diverse campus. Located in the historical Ag' School, George thoroughly enjoyed his many contacts and collaborations in the other schools, from the mathematics department to the veterinary school.

After joining the University of Florida in Gainesville in 2000, George became a distinguished professor in the departments of statistics of both the College of Agriculture and the College of Liberal Arts and a distinguished member of the Genetics Institute, affecting the life and production of those departments with his endless stamina.

Wherever he went, George played a key collaborative role in stimulating joint research, brimming

with ideas and eager to plunge into new problems. His enthusiasm was contagious, and coupled with his insight, encouragement and generosity, colleagues and students simply blossomed in his company.

George served as executive editor of *Statistical Science*, Theory and Methods editor of the *Journal of the American Statistical Society*, and editor of the *Journal of the Royal Statistical Society Series B*. Having just completed his four-year term with *JRSS B* when he passed away, George had a clear effect on the requirements of the papers published in the journal. The size of the volumes over his term decreased by almost half, despite an increase in the number of submissions! As an editor, George was known for his impressive efficiency while maintaining the same high standards he had set for himself.

For his contributions to statistics, George was elected Fellow of the American Statistical Association, Institute of Mathematical Statistics, International Statistics Institute, and American Association for the Advancement for Science. An ISI Highly Cited Researcher, he was elected a foreign member of the Spanish Royal Academy of Sciences, selected as a Medallion Lecturer for the IMS, and chosen as a recipient of the Distinguished Alumnus Award from Purdue University.

George was born on January 22, 1951, in Bronx, New York, where he attended the Bronx High School of Science. He earned his BA in math from Fordham and his MS and PhD in statistics from Purdue University, under the supervision of Leon Gleser. He spent a sabbatical year in Granada, Spain, in 2002–2003, where he built a strong collaboration with his friend Elias Moreno.

George enjoyed life to its fullest. In addition to his herculean contributions to the profession, he ran 13 full marathons and served as a volunteer firefighter in the village of Varna during his time at Cornell. While he passionately loved his work, his family always came first. He is survived by his wife, Anne; his children, Ben and Sarah; his brother, Carl; and a legion of friends in the statistics world. Beyond his significant contributions to statistical science, he will be remembered for his charismatic leadership of departments and students, as well as his unique sense of humor and his never-ending optimism. His laughter remains with us forever.

Contributions can be made in George's name to a fund at Purdue University by sending a check made out to Purdue Foundation with a memo saying "the George Casella Fund" to Rebecca Doerge, Department of Statistics, Purdue University, West Lafayette, IN 47907.

Online donations can be made by going to <https://donate.purdue.edu/DesignateGift.aspx>.

sectionnews

Biometrics

The Biometrics section is seeking volunteers to chair a session at this year's Joint Statistical Meetings, to be held from August 3–8 in Montréal, Québec, Canada. If you are interested, contact the section program chair, Wei Sun, at weisun@email.unc.edu.

Sun, along with section education chair, Donglin Zeng, also has organized six continuing education courses and six invited sessions. To read about the courses and sessions, visit the section news department online at <http://magazine.amstat.org/?cat=17>.

Statistics and the Environment

Statistics and the Environment (ENVR) chair, Petrutza Caragea, plans for a productive 2013. To start the year, the winners of the 2013 JSM Student Paper Award competition are the following:

First Place - Stefano Castruccio of The University of Chicago for “Global Space-Time Models for Climate Ensembles”

Second Place (tie) - Libo Sun of Colorado State University for “Penalized Importance Sampling for Parameter Estimation in Stochastic Differential Equations in Two Chronic Wasting Disease Epidemics” and Stacey Alexeeff of Harvard University for “Bias Analysis for the Use of Spatially Predicted Air Pollution Exposures in Linear Models of Air Pollution Health Effects”

The section seeks nominations for the 2013 ENVR Distinguished Achievement Medal and 2013 ENVR Young Investigator Award. Nominations for both awards must be submitted electronically as a PDF (preferred) or Word document to Marcia Gumpertz at gumpertz@ncsu.edu by March 30.

Along with sponsoring awards, the section is sponsoring five invited sessions at this year's JSM in Montréal. Before JSM, however, there is Spatial Statistics 2013: Revealing Intricacies in Spatial and Spatio-Temporal Data with Statistics. This conference will take place June 4–7 in Columbus, Ohio. See www.spatialstatisticsconference.com for details.

Also, the 23rd Annual Conference of the International Environmetrics Society will take place in Anchorage, Alaska, from June 10–14. See <http://ties2013.com> for more information.

To provide ENVR members with better access to information, Section Publications Officer Kate Calder is setting up an ENVR microsite that will be hosted by the ASA Community.

For more about the ENVR section, visit <http://magazine.amstat.org/?cat=17>.

Survey Research Methods

The Survey Research Methods Section (SRMS) publications officer, John Finamore, shares the ways the section publicizes its activities, including the most recent newsletter, available at www.amstat.org/sections/srms/newsJan13.pdf.

The most prominent SRMS publication tool is the SRMS website at www.amstat.org/sections/srms, which includes the most up-to-date information about the SRMS-sponsored competitions and awards, including the Waksberg Award, SRMS Student Travel Award, the Student Paper Competition, and the E.C. Bryant Scholarship Award. In addition, the website includes proceedings of the SRMS-sponsored Joint Statistical Meetings sessions from 1978–2011 (the 2012 proceedings will be posted later this year).

Other outreach tools are *Amstat News* and the ASA Twitter and Facebook social networking sites. For details, view the section news department online at <http://magazine.amstat.org/?cat=17>. ■

chapternews

Cleveland

Jerry Moreno

The 27th seminar in a series called Tools for Regaining the Competitive Edge, hosted by the ASA Cleveland Chapter, will take place May 31 in Cleveland, Ohio. Marepalli Rao will instruct the one-day seminar, titled “An Arboretum of Graphics.”

The seminar's format will differ this year in that it will be a hands-on workshop in which participants are encouraged to bring their laptops. Participants will download the free R software and achieve a good degree of mastery in producing a variety of graphs that will enhance their research or presentations. Many examples will be given from the health professions and industry. The R software has an advantage over most statistical packages in that it gives the user absolute control on forming graphics.

Rao holds faculty positions in the division of biostatistics and epidemiology and the department of biomedical engineering at the University of Cincinnati. He is a Fellow of the ASA, Institute of Mathematical Statistics, International Statistical Institute, and AAAS.

More information and a registration form can be found at www.bio.ri.ccf.org/ASA/cspring.html. Questions should be addressed to Jerry Moreno at moreno@jcu.edu. ■

To view section news in its entirety, visit <http://magazine.amstat.org>.

The following events are the latest additions to the ASA's online calendar of events. Announcements are accepted from education and not-for-profit organizations only. To view the complete list of statistics meetings and workshops, visit www.amstat.org/dateline.

* Indicates events sponsored by the ASA or one of its sections, chapters, or committees

» Indicates events posted since the previous issue

2013

May

12–17—Workshop on Statistical Genomics and Data Integration for Personalized Medicine, Ascona, Switzerland

For details, visit www.cbg.ethz.ch/news/ascona2013 or contact Niko Beerenwinkel, Mattenstrasse 26, Basel, International 4058, Switzerland; ascona2013@bsse.ethz.ch.

13–17—SAMSI Undergraduate Modeling Workshop, Research Triangle Park, North Carolina

For more information, visit www.samsi.info/workshop/undergraduate-modeling-workshop-may-13-17-2013 or contact Jamie Nunnally, 19 T.W. Alexander Drive, Research Triangle Park, NC 27709; (919) 685-9350; nunnally@niss.org.

»13–17—Visualization of Climate Data, Boulder, Colorado

For details, visit www2.image.ucar.edu/event/vcd2013 or contact Peter Guttorp, Box 354322, Seattle, WA 98195-4322; peter@stat.washington.edu.

15–17—Conference on Applied Statistics in Ireland (CASI) 2013, Co Kildare, Ireland

For details, visit www.casi.ie or contact Caroline Brophy, Department of Mathematics & Statistics, National University of Ireland Maynooth, Maynooth, International Co Kildare, Ireland; +35317083914; caroline.brophy@nuim.ie.

»16–18—USCOTS '13 and Call for Proposals, Raleigh/Cary, North Carolina

For more information, visit www.causeweb.org/uscots or contact Jean Scott, OSU – Dept. of Statistics, Columbus, OH 43210; (614) 688-5913; jscott@stat.osu.edu.

»17–18—5th Annual R/Finance: Applied Finance with R, Chicago, Illinois

For details, visit www.rinfinance.com or contact Dale Rosenthal, 601 S. Morgan St. (MC 168), Chicago, IL 60607; committee@rinfinance.com.

20–8/16—MBI Undergraduate Research Program, Columbus, Ohio

For details, visit www.mbi.osu.edu/eduprograms/undergrad2013.html or contact Stella Cornett, 1735 Neil Ave., Columbus, OH 43210; (614) 292-9870; stella@mbi.osu.edu.

***20–22—36th Annual Midwest Biopharmaceutical Statistics Workshop (MBSW), Muncie, Indiana**

For more information, visit www.mbswonline.com or contact Melvin Munsaka, One Takeda Pkwy., Deerfield, IL 60015; (224) 554-2846; melvin.munsaka@takeda.com.

23–24—3rd International Conference: Quantitative and Qualitative Methodologies in the Economic and Administrative Sciences (Q.M.E.A.S. 2013), Athens, Greece

For more information, visit users.teiath.gr/cfragos/index_files/Page1327.htm or contact Christos Frangos, Agiou Spyridonos Street, Athens, International 122 10, Greece; +30 6944162376; cfragos@teiath.gr.

26–29—41st Annual Meeting of the Statistical Society of Canada, Edmonton, Alberta

For details, visit www.ssc.ca or contact Rhonda Rosychuk, 3-524 Edmonton Clinic Health Academy, 11405 87 Ave. NW, Edmonton, AB T6G 1C9, Canada; (780) 492-0318; ssc2013@ssc.ca.

June

»2–4—7th International Total Survey Error Workshop (ITSEW 2013), Ames, Iowa

For more information, contact Sarah Nusser, Dept. of Statistics, 1212 Snedecor Hall, Ames, IA 50011; (515) 294-9773; nusser@iastate.edu.

Deadlines and Contact Information for ASA National Awards, Special Lectureships, and COPSS Awards

www.amstat.org/awards

April 1, 2013

ASA Gertrude M. Cox Scholarship

Nominations: Pam Craven, pamela@amstat.org
Questions: Eleanor Feingold, feingold@pitt.edu

April 1, 2013

ASA Outstanding Statistical Application Award

Nominations: Pam Craven, pamela@amstat.org
Questions: DuBois Bowman, dbowma3@emory.edu

April 1, 2013

ASA Edward C. Bryant Scholarship

Nominations: Pam Craven, pamela@amstat.org
Questions: Tapabrata Maiti, maiti@stt.msu.edu

April 1, 2013

ASA Excellence in Statistical Reporting Award

Nominations: Pam Craven, pamela@amstat.org
Questions: Morteza Marzjarani, marzjara@svsu.edu

April 1, 2013

ASA Samuel S. Wilks Memorial Medal

Nominations: Pam Craven, pamela@amstat.org
Questions: Paul P. Biemer, ppb@rti.org

***2–5—49th SRCoS Summer Research Conference, Burns, Tennessee**

For details, visit louisville.edu/sphis/bb/srcos-2013 or contact Don Edwards, Dept. of Statistics, University of South Carolina, Columbia, TN 29205; (803) 479-4814; edwards@stat.sc.edu.

3–7—Workshop on Compositional Data Analysis (CoDaWork 2013), Vorau, Austria

For more information, visit www.codawork2013.com or contact Peter Filzmoser, Wiedner Hauptstr. 8-10, Vienna, International 1040, Austria; +43 1 58801 10733; P.Filzmoser@tuwien.ac.at.

»*4–7—Quality and Productivity Research Conference, Niskayuna, New York

For details, visit www.qprc2013.com or contact Martha Gardner, 1 Research Circle, K-1 5A15A, Niskayuna, NY 12304; (518) 387-6546; martha.gardner@ge.com.

4–14—SAMSI Summer Program: Neuroimaging Data Analysis, Research Triangle Park, North Carolina

For more information, visit www.samsi.info/programs/summer-2013-program-neuroimaging-data-analysis-june-4-14-2013 or contact Jamie Nunnally, P.O. Box 14006, RTP, NC 27709; (919) 685-9350; admin@samsi.info.

»5–7—WIPFOR13 - Workshop Industry & Practices for Forecasting, Paris, France

For more information, visit conferences-osiris.org/wipfor or contact Xavier Brossat, 1 avenue du Général De Gaulle, Clamart, International 92 141, France; +33147653337; wipfor@edf.fr.

6–8—BISP8: 8th Workshop on Bayesian Inference in Stochastic Processes, Milano, Italy

For details, visit www.mi.imati.cnr.it/conferences/BISP8 or contact Antonio Pievatolo, Via Bassini 15, Milano, International 20133, Italy; bisp8@mi.imati.cnr.it.

7–8—MedicReS International CME Conference, Istanbul, Turkey

For more information, visit www.ic2013.medicres.org or contact Burak Akicier, Mariahilferstrasse 123 3, Vienna, International 1060, Austria; +436769783898; burak.akicier@medicres.org.

9–12—Joint Statistical Conference by the International Chinese Statistical Association (ICSA) and the International Society for Biopharmaceutical Statistics (ISBS), Bethesda, Maryland

For details, visit www.icsa.org/2013 or contact Aiyi Liu, 6100 Executive Blvd., Rockville, MD 20852; (301) 435-6962; liua@mail.nih.gov.

»*9–12—Graybill Conference on Modern Survey Statistics, Fort Collins, Colorado

For details, visit www.stat.colostate.edu/graybillconference/index.html or contact Jean Opsomer, Colorado State University, Department of Statistics, Fort Collins, CO 80523; (970) 491-3841; jopsomer@stat.colostate.edu.

10–12—4th Nordic-Baltic Biometric Conference, NBBC13, Stockholm, Sweden

For more information, visit nbbc13.org or contact Marie Jansson, Box 281, Stockholm, International SE-17177, Sweden; +46 8 52486150; Marie.Jansson@ki.se.

10–28—SAMSI: Modern Statistical and Computational Methods for Analysis of Kepler Data, Research Triangle Park, North Carolina

For more information, visit www.samsi.info/workshop/summer-2013-modern-statistical-and-computational-analysis-kepler-data-june-10-28-2013 or contact Karem Jackson, 19 T. W. Alexander Drive, RTP, NC 27709; (919) 685-9350; admin@samsi.info.

13–15—MedicReS World Congress on Good Medical Research, Vienna, Austria

For details, contact Jenny Knapp, Mariahilfer Strasse 123/3, Vienna, International 1060, Austria; +43 1

599 99 8070; jenny.knapp@medicres.org.

16–19—The 2013 Annual WNAR/IMS Meeting, Los Angeles, California

We are pleased to announce the 2013 Annual WNAR/IMS Meeting, which will be on the For more information, visit www.wnar.org or contact Kate Crespi, CHS 51-254, Box 951772, Los Angeles, CA 90095-1772; (310) 206-9364; ccrespi@ucla.edu.

19–21—R, Beyond the Basics, Provo, Utah

For more information, visit statistics.byu.edu or contact Amy Royer, 223 TMCB, Provo, UT 84602; (801) 422-4506; aroyer@stat.byu.edu.

20–22—International Workshop ARS'13 on Social Network Analysis, Rome, Italy

For details, visit www.ars13.unisa.it or contact Silvia Nenci, Via Silvio D'Amico 77, Rome, International 00145, Italy; +39 06 57335752; ars13@uniroma3.it. ■

To view the entire list of statistics meetings and workshops, visit www.amstat.org/dateline.



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Listings are shown alphabetically by state, followed by international listings. Vacancy listings may include the institutional name and address or be identified by number, as desired.

Professional Opportunities vacancies also will be published on the ASA's website (www.amstat.org). Vacancy listings will appear on the website for the entire calendar month. Ads may not be placed for publication in the magazine only; all ads will be published both electronically and in print.

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Listings will be invoiced following publication. All payments should be made to the American Statistical Association. All material should be sent to Amstat News, 732 North Washington Street, Alexandria, VA 22314-1943; fax (703) 684-2036; email advertise@amstat.org.

Employers are expected to acknowledge all responses resulting from publication of their ads. Personnel advertising is accepted with the understanding that the advertiser does not discriminate among applicants on the basis of race, sex, religion, age, color, national origin, handicap, or sexual orientation.

Also, look for job ads on the ASA website at www.amstat.org/jobweb.

California

■ The Quantitative sciences unit in the department of medicine at Stanford University is seeking a PhD-level statistician to join their vibrant team of academic statisticians. The job entails collaborating with clinical investigators as the lead statistician and overseeing junior statisticians in the design and analysis of cutting-edge medical research. Interested applicants should send statement of purpose and CV by email to manishad@stanford.edu. EOE.

■ Manager, Commercial Analysis. Amgen Inc. has an opportunity for a manager, commercial analysis. Reqs: master's & 2 yrs exp; & exp w/project mgmt; quantitative techniques & statistical analysis; SAS programming. Job site: Thousand Oaks, CA. Send résumé to: Ref. #84SVBF, Global Mobility, Amgen, Inc., One Amgen Center Drive, MS: B36-2-C, Thousand Oaks, CA 91320. No phone calls or emails pls. Must be legally authorized to work in the U.S. w/o sponsorship. EOE.

Colorado

■ University of Northern Colorado seeks an assistant professor in applied statistics. PhD (or ABD with degree completed by December 2013) in statistics, biostatistics, or related field required. Teaching excellence, strong research program/potential, ability to direct dissertations expected. Begins August 19, 2013. Submit application, vitae, three references by March 1, 2013. See www.unco.edu/cebs/asrm for complete position description and application procedures. UNC is an AA/EO employer.

Massachusetts

■ DePuy Synthes, a member of the Johnson & Johnson Family of Companies, is recruiting for a biostatistician to be located in Raynham, MA, or West Chester, PA. Apply here: www.Click2Apply.net/nkywgs. EOE.

■ Pfizer's BioTherapeutics Research is looking for a motivated statistician to work in a dynamic environment and contribute in the design, analysis and statistical leadership for early stage development studies ranging from pre-clinical to Phase IIb. This individual is also responsible for production of biostatistics deliverables,



The University of Georgia

Assistant Professor of Biostatistics Department of Epidemiology and Biostatistics

The Department of Epidemiology and Biostatistics at the University of Georgia invites applications for an Assistant Professor, tenure track, Biostatistics. A PhD in Biostatistics is required with one year experience in teaching and research. We are seeking applicants with expertise in spatial statistics, longitudinal data analysis methods, or survival analysis. The successful candidate will teach graduate-level biostatistics courses to students in the master and doctoral programs of the College of Public Health and are expected to be actively involved in extramurally funded multidisciplinary research.

The University of Georgia (UGA) is a land-grant research university. Established in 2005, the College of Public Health is actively developing a regional, national and international reputation in public health education and research. For more information, see <http://www.publichealth.uga.edu/>.

The University of Georgia is located in Athens, a progressive, vibrant and diverse community 60 miles northeast of Atlanta and an hour from the Blue Ridge Mountains. Athens is renowned for its music, arts and culinary scene, outdoor activities as well as collegiate athletics.

Applicants should provide statements detailing research interests, teaching and leadership philosophies, curriculum vitae to: Dr. John E. Vena, University of Georgia, Athens, GA 30602, T: (706) 542-8202, Email: jvena@uga.edu. To assure consideration, complete applications should be received by April 1, 2013. Applications will be entertained until the position is filled. The expected start date is August 12, 2013.

The University of Georgia is an Equal Opportunity/Affirmative Action Institution.

either personally or by coordinating with CRO staff or Pfizer colleagues in China. Apply to job 976270 at www.pfizercareers.com. EOE.

Missouri

■ The mathematics department of Washington University in St. Louis, MO, seeks to fill a one-year visiting position for the 2013–2014 academic year beginning August 2013. Responsibilities include teaching three one-semester courses. Applicants must have a PhD in statistics, biostatistics, probability, or related field. For more information, visit <http://wumath.wustl.edu/news/1477>. WUSTL is an affirmative action/equal opportunity employer; applications from women, minorities, veterans are encouraged.

Nebraska

■ The department of food science and technology, University of Nebraska - Lincoln is seeking applicants for a 9-month, tenure-track food allergy risk assessment specialist faculty position at the rank of assistant professor. The successful candidate will be one of four faculty involved in the world-renowned Food Allergy Research & Resource Program. For further details and to apply for this position, visit <http://employment.unl.edu>, requisition number 130008. 130008 EOE.

New Jersey

■ Pharmaceutical division seeking lead statistician for multiple studies covering varying ophthalmic therapeutic areas. The position will be the driving force in conceiving and developing study designs and analysis strategies. This is a highly visible role in a growing company where we have an important mission: Helping people see better - to live better. Visit www.bausch.com for details. Apply online or email CV to: Linda.Hines@bausch.com. EOE.

New York

■ The CUNY School of Public Health (SPH) offers a range of degree programs, including an MPH in epidemiology or biostatistics and a DPH in epidemiology. CUNY SPH seeks applications for assistant or associate professor to augment biostatistics teaching quality and engage in independent/collaborative research. Preference given to candidates w/ a growing track record of independent

research funding. This is a 9-month, salaried tenure-track appointment. Visit: www.cuny.edu/sites/sph.html.

■ The CUNY School of Public Health (SPH) offers a range of degree programs, including an MPH in epidemiology or biostatistics and a DPH in epidemiology. CUNY SPH seeks applications for assistant or associate professor to augment biostatistics teaching quality and engage in independent/collaborative research. Preference given to candidates with growing track record of independent research funding. This is a 9-month, salaried tenure-track appointment. Visit: www.cuny.edu/sites/sph.html.

Ohio

■ The Cleveland Clinic Department of Quantitative Health Sciences is recruiting for faculty and master's-level positions. Many areas are being sought, including biostatistics, health economics, health status measures, analysis of population-based registries, diagnostic test assessment, ROC analysis, and psychometrics. Details for all positions, as well as application instructions, are on our website: www.lerner.ccf.org/qhs/jobs. Cleveland Clinic is an AA/EOE.

Pennsylvania

■ Possible teaching-track position. Collegial environment emphasizing disciplinary and cross-disciplinary research and teaching. Position emphasizes teaching, program administration, curriculum development. Joint appointments possible with other units at CMU. See www.stat.cmu.edu (email: hiring@stat.cmu.edu). Send CV, teaching statement, relevant transcripts, and three recommendation letters to: Faculty Search Committee, Statistics, Carnegie Mellon University, Pittsburgh, PA 15213, USA. Application screening begins immediately, continues until positions closed. Women and minorities are encouraged to apply. AA/EOE.

■ Possible tenure-track and visiting positions. Collegial environment emphasizing disciplinary and cross-disciplinary research and teaching. All areas of statistics welcome. Joint appointments possible with other units in the Pittsburgh area. See www.stat.cmu.edu (email: hiring@stat.cmu.edu). Send CV, research papers, relevant transcripts, and three recommendation letters to: Faculty Search Committee, Statistics, Carnegie Mellon University, Pittsburgh, PA 15213, USA. Application screening begins immediately, continues



The graphic features a central white silhouette of a person with arms raised, set against a green background. Above this, the word "MEMBER" is written in white on a blue background. To the right, the phrase "get a" is written in white on a blue background, followed by "MEMBER" in white on a blue background. Below the central figure, there is a green box containing text about sharing membership benefits and participating in the program.

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until positions closed. Women and minorities are encouraged to apply. AA/EOE.

■ DePuy Synthes, a member of the Johnson & Johnson Family of Companies, is recruiting for a biostatistician to be located in Raynham, MA, or West Chester, PA. Apply Here: www.Click2Apply.net/nkyugsw. EOE.

South Carolina

■ Applications are invited for chair of the department of mathematical sciences at Clemson University. Qualifications include rank of full professor/equivalent and proven leadership experience, with administrative experience desirable. An earned doctorate or equivalent is required. Applications must be filed at www.mathjobs.org. Applications received by 2/1/2013 will receive full consideration; later applications may be considered until the position is filled. The position will be available 08/15/2013. EOE.

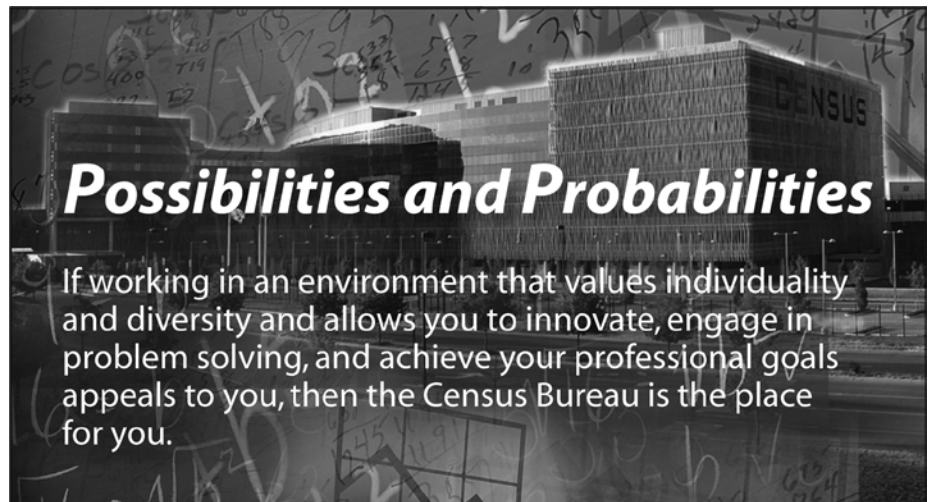


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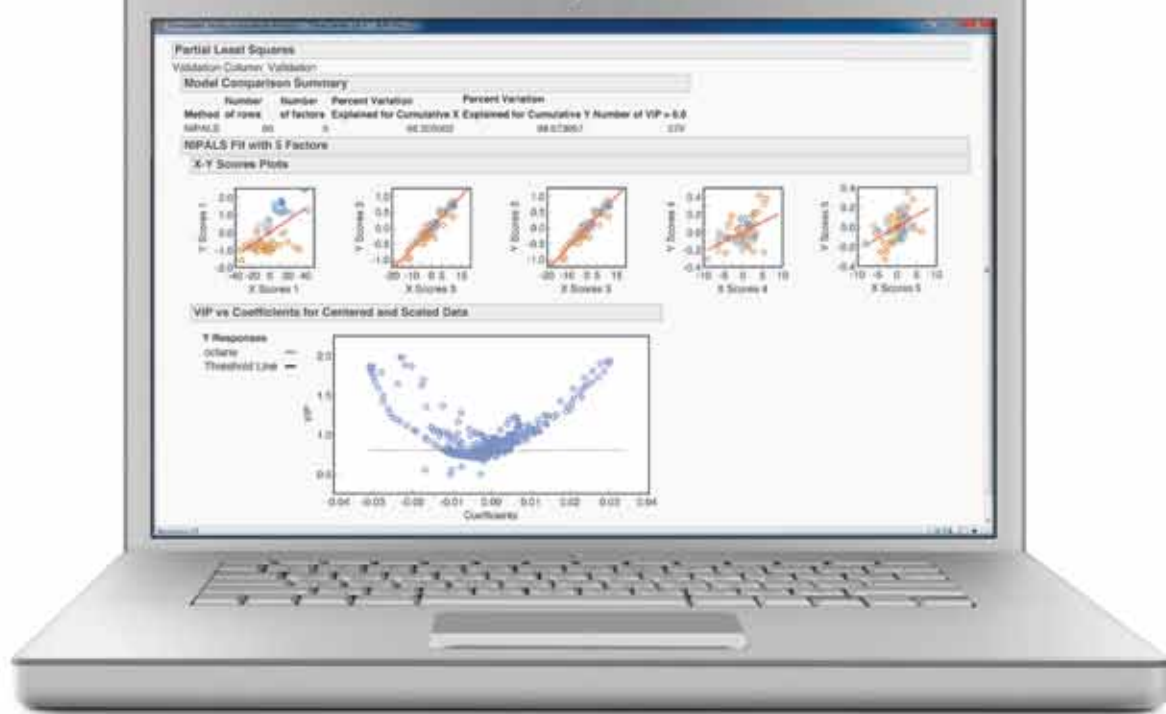
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