

November 2012 • Issue #425

AMSTATNEWS

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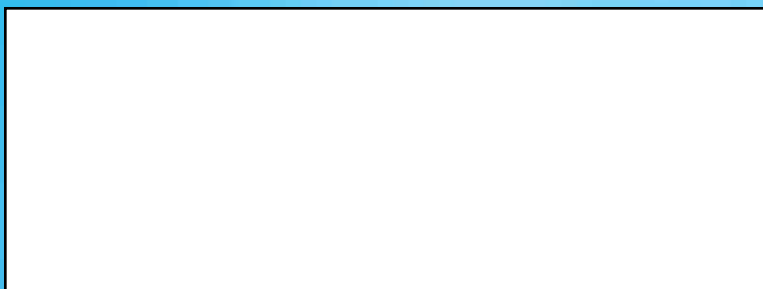


Turing Award Winner, Longtime ASA Member Talks Causal Inference

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Statistics and
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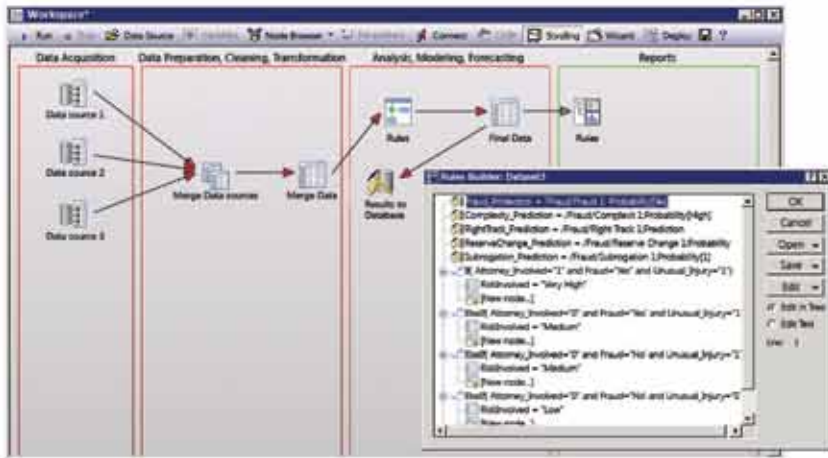


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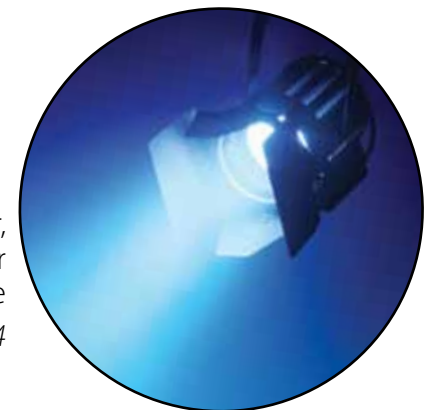


The American Statistical Association is the world's largest community of statisticians. The ASA supports excellence in the development, application, and dissemination of statistical science through meetings, publications, membership services, education, accreditation, and advocacy. Our members serve in industry, government, and academia in more than 90 countries, advancing research and promoting sound statistical practice to inform public policy and improve human welfare.

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Online Articles

The following articles in this issue can be found online at <http://magazine.amstat.org>.

In this month's **Statistician's View** column, LTC Charles Weko, a Senior Training analyst for the United States Army, looks at ways statisticians can prepare to overcome objections and misconceptions as they arise between the military and academics. View the column at <http://magazine.amstat.org/blog/2012/11/01/how-to-talk-statistics>.

Bronwyn Harch was recently appointed as chief of CSIRO Mathematics, Informatics, and Statistics. Harch has been recognized outside CSIRO for her contributions, including receiving two points of recognition at the 2010 Women in Technology Awards. To read more, visit <http://magazine.amstat.org/blog/2012/11/01/people1112>.

A chance encounter at a party resulted in a life-changing event for statistician and cryptologic officer **Victor Morin**. As a statistician and a Navy officer, he served in the White House and was awarded the Presidential Service Badge and Defense Meritorious Service Medal. Read more about his life at <http://magazine.amstat.org/blog/2012/11/01/spotlight-1112>.

The publishers of the **ASA-SIAM Series on Statistics and Applied Probability** market books worldwide in a variety of ways. Sara J. Murphy, series acquisitions editor, includes a list of their marketing strategies at <http://magazine.amstat.org/blog/2012/11/01/asa-siam-series-1112>.

Statistical Partnerships among Academe, Industry, and Government (SPAIG) offered an informative invited session, titled "The Impact of Collaborations Between Academe and Business/Industry/Government on the Profession," during the 2012 Joint Statistical Meetings in San Diego. To read about the event and see a photo of the speakers, visit <http://magazine.amstat.org/blog/2012/11/01/spaig-jsm>.

The International Indian Statistical Association (IISA) is seeking nominations for two **young researcher awards**. To be eligible, candidates must be a member of IISA. Visit <http://magazine.amstat.org/blog/2012/11/01/young-researcher-awards> for details.

Visit the **ASA Calendar of Events**, an online database of statistical happenings across the globe. Announcements are accepted from educational and not-for-profit organizations. To view the complete list of statistics meetings and workshops, visit www.amstat.org/dateline.

columns

27 **STATtr@k** **Wanted! Statisticians in the Federal Statistical System**

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.



Wright

Contributing Editors

Tommy Wright is chief of the U.S. Census Bureau's Center for Statistical Research and Methodology. He earned his master's and PhD degrees in statistics from The Ohio State University, his master's in mathematics from the University of Tennessee, and his bachelor's in mathematics from Knoxville College.



Little

Roderick Little is the Richard D. Remington Collegiate Professor in the biostatistics department at the University of Michigan and associate director for research and methodology and chief scientist at the U.S. Census Bureau. He earned his bachelor's in mathematics at Cambridge University and his master's and PhD in statistics and operational research at Imperial College, London.

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ASA Awards: Recognizing Excellence and Raising Visibility

When you think of an exciting awards ceremony, what comes to mind? Most likely, it's the glamour of the Academy Awards, with red carpets, black-tie attire, and millions of viewers. Just as the Academy Awards recognize professional excellence in the film industry, ASA awards honor outstanding contributions of our members and build the prestige of our profession. This column describes steps we are taking to expand our awards and increase their visibility.

New ASA Award

One of the most enjoyable duties of an ASA president is to congratulate the recipients of ASA awards who are recognized on stage during our annual awards ceremony. Until now, the ceremony has taken place on Tuesday evening at the Joint Statistical Meetings (JSM), along with the presidential address and presentation of new ASA Fellows.

This year, I had the added pleasure of congratulating the recipients of a new award. Fritz Scheuren and Marvin Zelen received the Karl E. Peace Award for Outstanding Statistical Contributions for the Betterment of Society. This award was established in 2012 by Christopher K. Peace, son of Karl F. Peace, on behalf of the Peace family to honor the life work of his father.

According to Jane Pendergast, who chaired the award committee, "The Karl E. Peace Award is special in that it recognizes those whose statistical contributions have had a strong, lasting



Fritz Scheuren (left) and Marvin Zelen, recipients of the first Karl E. Peace Award

impact on society, regardless of the complexity or innovation of the methodology used." She adds, "This award looks from the perspective of those outside our profession. Whereas other ASA awards recognize outstanding contributions within our field, this one recognizes the impact we have more broadly."

Purposes of Awards

The ASA's awards serve an important purpose by recognizing the following:

- Outstanding contributions through research, teaching, consulting, and applications of statistics (e.g., Samuel S. Wilks Award and Waller Education Award)
- Distinguished service to the profession and our association (e.g., Founders Award, editorial service awards, and chapter service awards)
- Contributions by students and young researchers (e.g., Gertrude M. Cox Scholarship in Statistics Award)

- Work by those outside our profession that builds public understanding of statistical science (i.e., Excellence in Statistical Reporting Award)

Most major awards are administered by ASA committees (see www.amstat.org/committees/committeelist.cfm). Many other are administered by sections and chapters.

The Need for More Nominations

The chairs of our awards committees regularly discuss common issues in meetings of the Awards Council, which is led by the past president. This year, the council found that some committees are not receiving enough nominations.

To increase awareness of the nominations process for awards given in 2013, the call for nominations is appearing in this issue of *Amstat News* (see Page 7). Note that for most ASA national awards, nominations must be received by March 15, 2013, or April 2, 2013.



Robert Rodriguez

Do you know of highly deserving colleagues, coworkers, or students who should be recognized for their accomplishments? Now is the time to start planning your nomination!

I encourage you to nominate outstanding women and minority members to increase their representation among award recipients. See “Gender Balance in ASA Activities” in the July issue of *Amstat News* (<http://magazine.amstat.org/blog/2012/07/01/genderbalanc>) for an analysis of gender balance in awards.

How to Prepare a Strong Nomination

The Awards Council also learned that some of the candidates nominated this year were not selected because their nominators did not make a strong case. Michael Chernick, who chaired the 2012 Dixon Award Committee, offers three suggestions for nominators.

First, carefully read the award criteria (on the ASA website) and focus your letter on examples that show how your candidate meets the criteria. You should not expect the award committee to recognize the candidate’s qualifications by reading a general-purpose résumé.

Second, ask colleagues to write supporting letters based on personal knowledge that provide additional perspectives on how the candidate meets the criteria. If a letter is not strong, either leave it out or ask the writer to provide additional information.

Third, ask the candidate to put together a tailored résumé that emphasizes accomplishments related to the criteria.

Paul Biemer, who chaired the 2012 Wilks Award Committee, summarizes what a nominator

should know: “A good nomination is well-written, concise, and addresses the criteria point by point. It should also be clear about the nominee’s unique qualifications for the honor. In the end, what really matters are the qualifications. No matter how well the nomination is written, if the nominee doesn’t stand apart from the rest of the nominees, the nomination will not succeed.”

Do We Have Enough Awards?

In my presidential address this year, I called on our association to become the “big tent” for statistics by attracting all kinds of statisticians, serving their needs, and promoting their contributions (see www.amstat.org/news/pdfs/RodriguezSpeech8_13_12.pdf). To recognize the accomplishments of an increasingly diverse membership, we should introduce awards in more areas. Currently, our awards do not even span the areas of statistical activity that are represented by our sections.

This coming year, the Awards Council will review the ASA awards portfolio and recommend areas in which we should add awards. Please contact Ron Wasserstein, our executive director, at ron@amstat.org with your suggestions.

A New Time for the 2013 Awards Ceremony

By combining the awards ceremony with the president’s address and the presentation of ASA Fellows, we severely limit the time available for presenting awards on Tuesday evening at JSM. For years, we have been unable to present all of our awards

on stage—which has diminished the prominence of many awards. Many members have expressed the desire for a more inclusive awards ceremony.

Our board of directors has decided to move the awards ceremony to 7:30 p.m. on Sunday evening at JSM 2013; the mixer will follow at 8:30 p.m. in a nearby room. The ceremony will include all the awards currently given on Tuesday evening, except for the Founders Award, which will still be presented on Tuesday evening with the new Fellows. New awards and some section awards will be presented on Sunday. For information about this process, contact Wasserstein.

In addition to providing broader coverage of awards, the ceremony will be redesigned as an awards celebration that will be enjoyed by everyone who attends.

Nominate, Congratulate, and Celebrate!

If you have watched the Academy Awards ceremony, you know that Oscar statuettes are presented in many categories to honor excellence in all aspects of filmmaking. Likewise, our awards should honor excellence in all aspects of statistical endeavor. When we visibly recognize the achievements of our colleagues and students, we not only honor and encourage them as individuals, but we also elevate our profession.

Please take the time to nominate a deserving member for an award. Then come to our new awards ceremony at JSM on Sunday, August 4, 2013. It will be a time of congratulation and celebration for all of us!

Robert N. Rodríguez

Orange County/Long Beach Chapter Approved

Sam Behseta

In August, the formation of an Orange County/Long Beach Chapter (OCLB) was approved by the ASA Council of Chapters Governing Board.

The council's decision was a welcoming reaction to an earlier proposal by an exploratory committee of local statisticians, as well as tens of local petitioners. Members of the Committee to Establish OCLB were statisticians at the University of California at Irvine, California State University - Fullerton, California State University - Long Beach, and representatives from local industrial outfits. The committee offered a number of compelling justifications for the birth of the new chapter, including the promotion of the discipline of statistics in the ever-growing region of more than 3.5 million residents, encompassing at least three major universities and a substantial number of statisticians affiliated with local commercial firms and governmental agencies.

The formation of the OCLA Chapter also will increase the number of statistical activities offered to OCLB members and members of adjacent chapters, provide more effective representation to the Council of Chapters regarding regional needs, and serve the local community—especially a considerable number of local high school and university students—more effectively by providing robust interaction between local academic institutions and surrounding commercial and governmental entities.

Immediately after the approval, the OCLB Chapter Council (OCLBCC) held a special session and appointed the following interim officers, who will serve

for one year or until the chapter's membership has been identified and an election can be held: Robert Newcomb, interim president; Annamarie Stehli, interim secretary; Dung Pham, interim treasurer; Tsung-Hua (Thomas) Lin, interim chapter representative; Kevin Nichols, interim vice president of academic affairs; Alan Safer, interim vice president of professional affairs; and Ann Harada, interim webmaster.

Also in its first meeting after the approval of the chapter, the OCLBCC was able to successfully address a number of immediate goals, including setting annual dues, preparing for the

first election of chapter officers, prioritizing and strategizing the creation of new sections within the chapter, and planning for upcoming public events such as career day and a local high-school poster competition.

Members of OCLBCC unanimously recognized the exemplary perseverance and leadership of the chapter's interim president, Bob Newcomb, in guiding their proposal through the many, mostly nontrivial, stages of transforming an idea into an actual chapter.

For details, visit <http://community.amstat.org/OCLB/Home>. ■

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Elementary-Level Statistics Enrollments Increase

Ellen Kirkman and Dalene Stangl

Every five years since 1965, a comprehensive study of U.S. undergraduate programs in the mathematical sciences has been undertaken by the Conference Board of the Mathematical Sciences (CBMS), with funding from the National Science Foundation and support from the mathematical sciences professional societies. In 2010, Westat was contracted to implement the survey. A stratified random sample of 600 institutions was selected from the roughly 2,500 that are either public two-year colleges or (public or private) four-year colleges and universities with undergraduate programs in mathematics or statistics. Depending upon their programs, the institutions selected received the survey instrument for undergraduate mathematics programs at four-year colleges and universities, mathematics programs at public two-year colleges, or undergraduate statistics programs at four-year institutions. For the first time, the survey instrument was available both online and in hard copy.

The CBMS surveys request enrollment data for individual courses and information about majors, curricula, and pedagogy at the surveyed institutions; additional information about faculty is collected by the Annual Survey of the Mathematical Sciences. A report based on the data gathered will be published in the fall of 2012, both online and in a paper monograph. Access to the reports of the 2005, 2000, 1995,

and 1990 CBMS surveys can be found at www.ams.org/cbms.

The CBMS surveys have been useful to academic planners and department chairs seeking additional resources from college and university administrators, as well as those seeking funding for further programs in mathematics, science, and technology at the state and national levels. Highlights from the 2010 survey are given below. Seventy statistics departments responded for a response rate of 60%. Results here are for four-year college and university statistics departments during fall 2010, unless otherwise specified.

Enrollments

Elementary-level statistics enrollments in fall 2010 exceeded the levels of fall 2005 by 50%, rising from 54,000 to 81,000. These enrollments were about 65% larger than in fall 1995. In 2010, the enrollment in elementary-level statistics for statistics departments was about one-third the enrollments in mathematics departments (231,000) and about three-fifths the enrollments in two-year college mathematics programs (137,000).

Upper-level statistics enrollments increased about 13% to 27,000 between 2005 and 2010, and were about 69% above the 1995 level. Enrollments in upper-level courses are more closely balanced between statistics and mathematics departments (27,000 vs. 32,000) than for elementary-level statistics.

Of the freshmen entering in fall 2010, 13,000 had advanced placement (AP) credit for elementary statistics.

Bachelor's Degrees Granted

The total number of bachelor's degrees in statistics awarded through the nation's mathematics and statistics departments between July 1, 2009, and June 30, 2010, was 1,192—354 were awarded in mathematics departments, 838 in statistics departments.

Forty-two percent of bachelor's degrees in statistics were awarded to women, 42% of those in statistics departments and 37% in mathematics departments.

Appointment Type of Instructors

The percentage of undergraduate sections in statistics departments of four-year colleges and universities taught by tenured, tenure-eligible, or permanent faculty increased between fall 2005 and fall 2010 from 47% to 49%.

Pedagogical Methods Used

Methods of teaching elementary/introductory statistics in mathematics and statistics departments shows greater use of real data and technology in courses taught in statistics departments and slightly greater use of additional assignments (e.g., projects, oral presentations, or written reports) in mathematics departments.

Number of Faculty

In statistics departments with doctoral programs (which were the only statistics departments whose faculty demographics were gathered in 2005), the total number of full-time plus part-time statistics faculty increased 5% from 2005, while the number of full-time doctoral-level statistics faculty increased 6% from 2005. Doctoral statistics department enrollments have more than doubled since 1995, but are up only 11% from fall 2000.

The number of part-time statistics faculty at doctoral statistics departments decreased 6% from 2005.

In doctoral-level statistics departments, from 2005 to 2010, the total number of tenured plus tenure-eligible statistics faculty grew very slightly, and the number of other full-time statistics faculty increased by 32%.

Gender and Ethnicity

In doctoral statistics departments in fall 2010, women were 26% of all full-time faculty, 16% of tenured faculty, and 40% of tenure-eligible faculty. All these percentages are larger than in 2005.

Very little change in the distribution of ethnicities of mathematics and statistics departments faculty in four-year colleges and universities occurred between fall 2010 and fall 2005. Statistics departments (master's-level and doctoral-level combined) showed white male full-time faculty dropping from 55% to 48.8% and some gains in the percentage of Asian faculty. The percentages of black and Hispanic faculty remain small in both mathematics and statistics departments.

Drafts of the full report may be found at www.ams.org/profession/data/cbms-survey/cbms2010-work. The final and earlier versions are at www.ams.org/profession/data/cbms-survey/cbms-reports. ■

COMMITTEE ON NOMINATIONS

Call for ASA President-elect, Vice President Nominations

Mary Ellen Bock, Committee on Nominations Chair

The ASA needs your help. Nominations are being sought for ASA president-elect and vice president candidates for the 2014 election year. Yes, the 2013 elections have yet to be held, but the Committee on Nominations needs time to evaluate nominations to propose the best possible slate of candidates in 2014 (to begin in 2015) for these critical positions.

As a member of the ASA, you recognize the importance of leadership in our diverse, complex, and multidisciplinary field. You and all fellow ASA members deserve visionary leaders who can ensure our discipline has a voice at the table where appropriate, whether it be in academia; research firms; federal, state, or local government; or nonprofit organizations. This is why we need your input.

For this election cycle, the president-elect will be nominated from academe and the vice president from business and industry. Think about colleagues and associates who are members of the ASA and would make good candidates for these positions. Think about members who have helped run a conference or are active in your section or chapter. Then, nominate your choices for the 2014 president-elect and vice president by emailing Mary Ellen Bock, chair of the Committee on Nominations, at mbock@purdue.edu or Pam Craven, ASA executive secretary, at pamela@amstat.org. Forward as much information about your nominee as possible (though this is optional). The committee will research each candidate thoroughly and discretely.

The deadline for nominations is February 1, 2013. ■

ASA Journals in Need of Editors

The ASA is inviting nominations and applications for the following editorships:

Journal of the American Statistical Association Theory and Methods Co-Editors

Journal of the American Statistical Association/The American Statistician Reviews Editor

Statistics in Biopharmaceutical Research Editor

For more information, including detailed descriptions of the duties and responsibilities of these positions, visit www.amstat.org/publications.

Nominations should be made no later than December 14.

Applications for an editorship should be sent electronically to journals@amstat.org and include a CV; the names of three references; and a letter of interest in the position that includes a brief statement of your vision for the editorship, directions you would pursue, and contributions you would make if selected. Application deadline is February 15, 2013.

Statistics and Human Rights

ASA participates in focus group on science and human rights

Ali Arab



Ali Arab, born in Tehran, Iran, is an assistant professor of statistics in the department of mathematics and statistics at Georgetown University.

Article 15 of International Covenant on Economic, Social, and Cultural Rights recognizes both scientific research freedoms and the right to enjoy the benefits of scientific progress and its applications as human rights. The role of statistics in this viewpoint is of particular importance. On the one hand, the scientific community (including statisticians) is becoming increasingly more aware of these rights and thus, advocates scientific freedoms when and where these freedoms are violated. On the other hand, in practice, statistics plays an important role in human rights-related projects and, in particular, those that require interaction of science and human rights (i.e., data collection and analysis is often needed). Thus, one should examine human rights implications of statistics in both statistics as a science and statistical data as a scientific tool that serves other disciplines.

On September 13, 2011, 13 ASA members attended a focus group on the United Nation's Article 15 project organized by the Science and Human Rights Coalition (<http://srhrl.aaas.org/coalition/index.shtml>) of the American Association for the Advancement of Science (AAAS SHRC). The goal of the focus group was to identify issues related to Article 15 that are specific to the science of statistics and the statistics community. AAAS SHRC has organized similar sessions with more than a dozen other scientific societies to date.

The ASA participants consisted of a diverse group of

ASA and AAAS Science and Human Rights Coalition

The ASA has been an active participant in and member of the AAAS Science and Human Rights Coalition since its launch in January 2009. For almost four years, this expanding network of scientific and engineering societies has been working to build bridges between science and human rights. Some of the outputs of the coalition in the past few years include the Primer: Scientific Freedom and Human Rights, a workshop on connecting science, engineering, and human rights beyond human subjects research; the Starter Kit: Helping Your Society Promote Human Rights, a training workshop for human rights practitioners on impact evaluation; and a series of focus groups to determine the meaning of the right to benefit from scientific progress from the perspective of scientists.

Statisticians have a long-standing history of involvement in human rights, and their participation in coalition activities reflects this. To join the coalition or find out more, go to <http://srhrl.aaas.org/coalition/index.shtml>.

statisticians from academia, government, and private industry. Members of the focus group discussed many aspects of the role of statistics in human rights problems, as well as rights of statisticians as a community and as individual scientists. For example, under Article 15, governments are committed to recognizing the right of everyone to enjoy the benefits of scientific progress and its applications. Along these lines, the focus group participants identified the main themes as benefits of statistics to society (and thus, promoting the socially responsible practice of statistics), expanding primary education of statistics, ease of public access to data, data accuracy and quality, and protection of privacy in sampling and data analysis.

Two instances given were the benefit of objective analysis of information and measuring the effectiveness of various programs. Also, discussants identified the roles of the government in maintaining Article 15 concerning statistics as involvement of statisticians in data-driven policymaking processes, development of regulations on collection, and usage of data collection to limit the misuse of data in procedures that may lead to human rights violations.

For the aspect of Article 15 requiring governments to conserve, develop, and diffuse science, the discussants summarized that the government should maintain the development and diffusion of statistics by increasing funding for development of statistical methodology,

promoting the dissemination of statistical knowledge and methodology in society, promoting the use of statistics in policy formulation and implementation, and expanding statistics education and statistical literacy in K–12 education.

Regarding conservation of statistics, the discussants agreed that the government should improve its practices of maintaining better data storage and IT security procedures, improve and expedite efforts to restore historical data that may be in obsolete formats (e.g., index cards, etc.), and improve and standardize data archival practices within its agencies. Moreover, the government should maintain independent and accurate statistics. This requires the government to constantly oversee, adjust, and improve the statistical procedures used by the relevant agencies in developing official statistics. To this end, interaction and a close working relationship between the government statistical community and academic and private sector statisticians can be beneficial.

The focus group also identified benefits of statistics to personal decisions. For example, easy public access to data on housing, schools, public health, and financial matters can have a positive impact in the community at the personal level, because individuals can make better-informed decisions. With the increasing popularity of data collection and widespread usage of devices that can collect data cheaply and easily, this aspect of benefit of statistics is expected to play an important role in decision-making processes at both the community and individual levels.

Finally, the focus group agreed that the statistics community should encourage its members to increase interdisciplinary collaboration with other disciplines that may have social justice and

human rights implications and suggested several topics as issues that the statistics community should promote to improve its role in benefiting society. These topics included promotion of international collaborations, access to the results and benefits of research, and standardization of data practices. For example, the statistics community and the government should work together and decide on common data formats for federal data, as well as designate a federal organization such as the Federal Trade Commission to handle the requests and transmission of federal data between the United States and other countries while maintaining standard guidelines on the data-usage restrictions. The statistics community should also work with the government to ensure privacy and disclosure

protections of survey respondents or human research subjects.

In conclusion, as members of the statistics community, we should raise awareness regarding the misuses of statistics that may lead to human rights violations and identify potentials for violations of human rights based on our work. A simple example is to identify whether data and statistical analysis are being used for surveillance purposes, profiling, violation of privacy, or any other violations of basic human rights.

We statisticians, as vital members of the scientific community, should recognize and promote Article 15 in our research, teaching, collaborative efforts, and interactions with the local and global scientific and public communities. ■

Spatial Statistics 2013: Revealing Intricacies in Spatial and Spatio-Temporal Data with Statistics

The Spatial Statistics 2013 conference will be held in the Ohio Union at The Ohio State University June 4–7. Researchers participating in this conference come from fields such as agriculture, geology, ecology, epidemiology, geography, hydrology, and spatial econometrics.

Keynote speakers include Robert Haining of the University of Cambridge, UK; Pierre Legendre of the University of Montréal, Canada; Jean Paelinck of George Mason University; Lance A. Waller of Emory University; and Jinfeng Wang of the Chinese Academy of Science at Beijing, China.

The plenary speakers are Sudipto Banerjee of the University of Minnesota; Montserrat Fuentes of North Carolina State University; Jorge Mateu of the University of Navarra, Spain; Ronny Vallejos of Universidad Técnica Federico Santa María, Chile; and Tonglin Zhang of Purdue University.

Abstracts should be submitted by February 25, 2013. Also, persons who are interested in organizing a session have until January 31, 2013, to submit a proposal. December 1 is the deadline for those interested in organizing a half- or full-day workshop, which will be held on June 4, immediately prior to the main meeting.

Selected papers from the conference will be eligible for publication in a special issue of *Spatial Statistics*, and, given sufficient interest and appropriate topics, special issues of *Geographical Analysis* and *Computers & Geosciences*.

For more information or to submit individual paper abstracts, session proposals, and workshop proposals, visit www.spatialstatisticsconference.com.

Communication, Influence Keys to Success in Statistics

Robert Starbuck

What does it take to be a highly successful professional statistician? A good foundation in statistical theory and methodology is an obvious requirement, and one that is typically achieved through completion of academic degree programs in statistics and continued learning of statistical theory and methodology throughout one's career via attendance of courses, seminars, and professional society meetings and through self-study (e.g., reading technical journals and books). Other less obvious requirements for success are the ability to effectively communicate with and influence other people, and this will be the focus of this article.

Why do communication and influence skills matter? Your work products are typically communicated through a written document or oral presentation. The audience for these communications varies from well-trained statisticians to people with little or no formal training in statistics. The better the content and delivery of your message, the more likely it will be heard and influence those hearing it. A person who consistently communicates well will achieve greater influence than would otherwise occur.

How do you acquire better communication and influence skills? Courses in these topics are not routinely included in academic degree programs, though some forward-looking programs have begun to include them. Some employers provide courses for their employees, but they may be sacrificed in tight financial times. Numerous courses are available through private companies, whose business is to provide such training, but the daily cost per participant in these courses typically exceeds \$500, an amount many statisticians cannot afford to pay themselves and many employers will not support.

Fortunately, the American Statistical Association and Eli Lilly and Company are addressing the need for communication and influence skills.

American Statistical Association

ASA President Robert Rodriguez established the Career Success Factors Workgroup (<http://magazine.amstat.org/blog/2012/01/01/prescornerjan12>) to provide career-building courses on topics such as presentation skills and influence skills. The first action of the workgroup was to determine what topics that are of importance to statisticians would be

considered for course development. That resulted in the following list of career success factor topics:

- Personality training
- Influence skills
- Team-building
- Presentation skills
- Defining a problem
- Negotiation skills
- Understanding business purpose
- Time management
- Leadership skills
- Career planning
- Ethics
- Communication skills
- Professional appearance and demeanor
- Facilitation skills
- Cost-benefit training

The workgroup selected an initial set of topics to work on and combined some of them into single courses. The courses being developed are the following:

- Presentation Skills
- Influence and Leadership Skills
- Personality Training and Team Building
- Career Planning

Course material is being gathered and assembled, and a "train the trainer" course will be prepared for each topic and delivered to ASA members who want to participate as instructors.

Each course is expected to be one day in length, though some topics may need more time to cover. In the latter cases, the course might be offered on consecutive days or divided into a series of one-day courses offered at different points in time (e.g., beginning, intermediate, advanced).

Ideally, courses will be offered in numerous locations convenient to most ASA members (including those residing outside of the United States), and "local" enough to minimize travel costs, both for the attendees and instructors. Though some courses might be offered in conjunction with major ASA meetings (e.g., JSM), the majority of course participation is anticipated to occur in a manner unconnected with such meetings. Keeping the course costs modest should make the courses affordable.

Many ASA members live in areas that have a local ASA chapter, and it is anticipated that ASA chapters will embrace these courses as a meaningful way to serve their members and increase the attractiveness of being a chapter member. The chapter could play a key role in identifying a champion to provide a meeting facility and sponsors to provide refreshments. ASA sections also may provide similar support to enable their members to benefit from these courses.

Some courses may be suitable for webinars, in which case “local” pertains more to time zones than location. For these courses, webcasts also may be created to enable ASA members to view a course when it fits into their schedule. Information about webinars and webcasts will be posted on the ASA web page.

Eli Lilly and Company

The statistics organization at Eli Lilly and Company created a leadership development program to improve statisticians’ ability to lead and influence innovation; increase statisticians’ involvement in critical decisionmaking; and attract, develop, and retain talented statisticians. These goals were based on feedback—solicited from internal customers—regarding the impact and leadership of statisticians at the company. Communication and influence skills are essential parts of this program.

Each year, employees at Lilly write development plans for themselves, focusing on skills the employee and his or her supervisor agree could be acquired or improved; some aspect of leadership development is required as a line item in each person’s development plan. Lilly assembled a database of resources statisticians can use when updating their development plans each year. This database contains links to articles, short courses, books, and videos, as well as ideas and contacts for activities to develop their communication and influence (and other leadership) skills.

Quarterly, Eli Lilly hosts executive leadership presentations by internal and external leaders with a variety of backgrounds. Presenters have included Lilly business unit vice presidents and retiring statisticians, as well as a college basketball coach and a CEO of another company. These presenters tell the stories of their leadership journeys and engage in question-and-answer sessions; they inspire, teach key leadership lessons, and highlight leader role models. Arranging a diverse group of accomplished presenters, who are good communicators and influential in their fields, is key to the value this presentation series provides.

A third mode of developing leadership skills that Lilly has implemented is via a series of multi-day events, focusing on interactions with leaders,



From left: Bob Starbuck and Ofer Harel listen to Jeanine Buchanich during the Train the Trainer workshop at the 2012 Joint Statistical Meetings in San Diego, California.

reflection, discussion, and peer-to-peer teaching of key leadership skills. This program is completed by participants identifying personal barriers to their full leadership potential and action items to address them.

Efforts of Eli Lilly’s leadership development program that have focused specifically on communication skills include a competition for the best video clip highlighting good communication, a group dedicated to communication skills in the company’s internal social network, and a web conference on how to facilitate meetings remotely.

Lilly employees have responded positively to these efforts. Fanni Natanegara, who has worked at Lilly for nine years, said, “In addition to focusing on specific leadership elements, we also got a chance to interact with internal and external leaders and hear about their inspiring leadership journeys. The offsite visits, which included meeting their CEOs, reinforced the in-class learning and highlighted the common thread of leadership behavior.”

W. Scott Clark, a senior director in the organization, said, “Because of our leadership development program, I’ve seen big changes from even some of my experienced staff. Their conscious efforts on communication skills and improving their influence on senior leaders have really made a difference.”

This leadership development program, part of a comprehensive strategic effort started four years ago, has had measurable impact on raising the floor (i.e., increased expectations and increased performance) for statisticians at the company. For more information about this program, contact Gary Sullivan at sullivan_gary_r@lilly.com.

These are just two examples of ways organizations can foster the growth of communication, influence, and other nontechnical skills of their members. So take the opportunity to do something about your nontechnical skills; those skills may be the difference between your being a good statistician and a great statistician. ■

Meet EIA Administrator, Adam Sieminski

Amstat News invited Adam Sieminski of the U.S. Energy Information Administration (EIA) to respond to the following questions so readers could learn more about him and the agency he leads. Look for other statistical agency head interviews in past and forthcoming issues.

What about this position appealed to you?

Although most of my career has been spent in the private sector, public service is something I've thought about for a long time and leading EIA is an honor. Energy is an exciting and important field—worth spending a career on. It is global in scope—with international and geopolitical dimensions—but very local as well, with the price at the pump affecting household budgets. As a customer of EIA for virtually my entire professional career, I can attest to the fact EIA's mission is as critical today as when it was created by Congress in 1977. EIA is indispensable as the most important and authoritative source of information on energy, and it has an unrivaled reputation for fairness, even in this most political of cities.

Describe the top two or three priorities you have for the Energy Information Administration.

There are four basic principles that are guiding my efforts at EIA. First, we need to be innovative and creative, to find new ways to get better information faster and cheaper.

Better: We need to be sure, to the best of our ability, that what we are putting out is based on the best data and the best tools, and

that when there's an error, we own up to it and correct it quickly.

Faster: EIA has and will continue to find ways to streamline our approaches so we can get accurate data out to the public in a world in which the term "real-time" has become a way of life.

Cheaper: We all know about budget issues—and we also know that information technologies have become far more powerful and less expensive. If we do it right, system changes and upgrades can provide greater value and lowered costs.

Second, we need to promote best practices for data management. We need to find and adapt the best of what others are doing—that means other agencies as well as think tanks, academics, industry, and NGOs that are doing energy research.

Third, we need to make EIA data, analysis, and forecasting more readily available and accessible to stakeholders. EIA's already moving in that direction with articles that are shorter, punchier, and more market relevant. We also need to improve EIA's dissemination platform by providing a more flexible foundation. We are getting there, but there's still much more we can do to expand our reach through interactive tools such as dynamic mapping, animation, and data visualization.

Fourth, I want EIA to be recognized as the exciting place it

is so we can attract more good people. Young people just out of school, certainly, but also more senior people with experience in different parts of the energy sector, so that we can be on the cutting edge of data analysis, providing insights to our entire customer base, from policymakers and investors to homeowners and school kids.

What do you see as your biggest challenge(s) for EIA?

This is one of the most dynamic times I can remember for the energy sector, which leads to challenges for consumers, suppliers, policymakers, and the EIA. Our data collection must keep up with the rapidly changing energy landscape to avoid gaps in our knowledge. And our analyses must be both balanced and forward-looking enough to factor in the major forces remaking the energy world at an accelerating pace. And we must accomplish this in a time of increasing budgetary pressure. We are also looking at a substantial number of upcoming retirements—a problem facing the energy industry more broadly. One of the things I am going to be spending a lot of time on is trying to replace people as they retire and making sure we get the right mix of people.



Adam Sieminski served as a senior director on the staff of the National Security Council prior to becoming the administrator to the EIA. He is a member of the Washington, DC, investment professional society and holds the Chartered Financial Analyst designation.

How can the statistical community help you?

EIA is an active member of the community of federal statistical agencies, as well as the wider statistical community. Working with groups such as the Inter-Agency Council on Statistical Policy and the American Statistical Association encourages shared approaches to common challenges in statistical methodologies, data sharing, confidentiality, recruitment, and federal budget constraints.

EIA has a long-standing relationship with the ASA Committee on Energy Statistics, meeting twice each year to obtain advice on survey methodology and energy forecasting. Our meeting format involves pre-meeting interactions between

EIA staff and the expert committee members.

This year, the Committee on National Statistics of the National Academies (CNSTAT) issued *Effective Tracking of Building Energy Use: Improving the Commercial Buildings and Residential Energy Consumption Surveys*, which made recommendations to improve EIA's largest consumption surveys. Our staff continues to work with the wider statistical community to engage the CNSTAT recommendations.

Prior to your tenure, what do you see as the biggest recent accomplishment of the agency?

We can have the best data and analysis in the world, but if we at EIA are not communicating it

effectively to different audiences, they aren't getting the full value of the work we are doing.

One recent innovation that has made EIA's information more relevant and accessible is Today in Energy (TIE). TIE is timely and has drawn on all of our divisions. It covers a broad swath of ideas and has involved a huge cross-section of our people. It was a daily must-read for me when I was at Deutsche Bank and continued to be when I was at the White House. I'd like to see EIA build on that going forward. In the information-rich world we live in, we need to think of ourselves as the homepage for the energy marketplace. ■

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The advertisement features a woman in a dark suit pointing at a large screen displaying various mathematical formulas, including $Z^* = \frac{\delta}{se(\delta)}$. The background is a dark blue with white text and formulas.



Turing Award Winner, Longtime ASA Member Talks Causal Inference

Longtime ASA member Judea Pearl is the winner of the 2012 Turing Award, the most prestigious award in computer science. Using some of the proceeds from the award, Pearl is setting up a contest to help advance the teaching of causal inference in introductory statistics courses. ASA Executive Director Ron Wasserstein recently interviewed Pearl about the Turing Award and Pearl's interest in promoting instruction of causal inference.

RW: Congratulations on receiving the Turing Award! Please tell us a little bit about the work the award committee cited when selecting you and where you hope that work will go in the future.

JP: The award committee cited my works in probabilistic and causal reasoning that “enabled remarkable advances in the partnership between humans and machines.” The applications they highlighted include “medical diagnosis, homeland security, and genetic counseling to natural language understanding and mapping gene expression data.”

Needless to state, I was not personally involved in these many applications, but they stem

indirectly from my earlier work on Bayes networks, a graphical model that was developed in the 1980s by computer scientists and statisticians (including P. Dawid, S. Lauritzen, D. Spiegelhalter, G. Shafer, D. Cox, and N. Wermuth). This development has enabled machines to represent probabilistic information parsimoniously and meaningfully over many variables and to draw its consequences in light of new evidence.

My contribution was to define the mathematical relationships between graphs and probabilities (with A. Paz) and to devise algorithms that compute posterior probabilities swiftly and distributedly. Storage space and update time were the two major hurdles in the 1980s for representing and processing uncertain information by computers.

An interesting anecdote from that period may be of interest here. I think I was the only one who insisted all along on computing posteriors in a distributed fashion, that is, by passing messages among simple and repetitive computational units, each assigned to a different variable. Why? Because this was the only biologically feasible way we could explain how the human brain deals with uncertainty, say when we read English text or cross a street. My colleagues at that time could not have cared less

how humans do things, as long as the algorithm was efficient and correct. But as things turned out, it was this biologically inspired algorithm, called “belief propagation,” that scaled up (as an approximation) in practical applications and eventually enabled computers to process problems with thousands of variables. The moral of the story is that we should not underestimate what we can learn from fallible humans, even in statistics, where human judgment is often synonymous with bias.

Looking back, everything we learned from Bayes networks turned applicable when we made the transition to causal reasoning, and it did not take long to define a new object, called “causal Bayes network” or “causal diagram,” which encodes not merely conditional independencies, but also effects of outside interventions, like those present in controlled experiments. From here, the road laid opened to “do-calculus”—a symbolic logic for deriving all interventional and observational implications that a given model entails. This led to a complete solution of the infamous “identification problem,” namely, to decide which causal effects are estimable from nonexperimental data and how, given the theoretical assumptions that a researcher encodes in the diagram.

I should also mention the emergence of counterfactual calculus from a semi-deterministic version of Bayes network, with the help of which we were able to unify the graphical and potential-outcome approach of Neyman, Rubin, and Robins, thus forming a symbiotic methodology that benefits from the merits of both paradigms.

One triumph of the symbiotic analysis has been the emergence of lively research activity in non-parametric mediation problems, namely, to estimate the extent to which an effect of treatment on outcome is mediated by a set of variables standing between the two. The importance of this analysis lies, of course, in unveiling the mechanisms—or pathways—of the data-generating process, thus telling us “how nature works.” These sorts of questions were asked decades ago by Fisher and Cochran, but, lacking the tools of graphs and counterfactuals, they could not be addressed until quite recently. I am surprised, therefore, that teachers of statistics (as well as econometrics and other data-intensive empirical sciences) are not rushing to introduce these new tools in their classrooms.

As to the future, I see untapped opportunities in aggregating data from a huge number of different sources, say patient data from hospitals, and coming up with coherent answers to queries about yet unseen environment or subpopulation. I call this task “meta-synthesis,” after realizing that current methods of meta-analysis do little more than average apples and oranges to estimate properties of



Pearl

bananas. What we need is a principled methodology for analyzing differences and commonalities among studies, experimental as well as observational, and pooling relevant information together so as to synthesize a combined estimator for a given research question in a given target subpopulation.

We have begun to look into this challenge through the theory of “transportability” (with E Bareinboim, 2011), and found, not surprisingly, that the inferential machinery of the do-calculus is indispensable when it comes to transferring empirical findings across populations. I have great hopes for this line of research.

RW: Do you consider yourself a statistician or a computer scientist, or is that a distinction you even make when you think of yourself and your work?

JP: There is a lot in common to statisticians and computer scientists, especially those working on machine learning and inference under uncertainty. Both are attempting to make sense of data, and both are going about it in a systematic way. The distinction comes in two dimensions: first, what it means to “make sense of data” and, second, what language we use in our mathematics. For the great majority of statisticians, “making sense” means estimating useful properties of the joint distribution that underlies the observations. For a computer scientist, “making sense” usually means gaining a deeper understanding of the mechanism that generates the data, and such understanding cannot be achieved, even when we have a complete and precise specification of the joint distribution function. Thus, if we take this dividing line seriously, I was a statistician before 1988 and turned computer scientist

hereafter, when I made the transition from probabilistic to causal inference.

But the other dividing line is perhaps more fundamental. Computer scientists are extremely sensitive to notation, and extremely careful about making all assumptions explicit in their chosen notation. The reason is simply that a robot is a fairly stupid reasoner, and, if we do not spell out explicitly all assumptions, outrageous conclusions are likely to be derived. Statisticians, on the other hand, are ingenious reasoners and can perfectly manage the analysis while keeping causal assumptions in their heads, without making them explicit in the mathematics. For example, when Fisher invented the randomized experiment, he did not find it necessary to deploy special notation to distinguish experimental from observational findings. As a result, one would be hard pressed even today to find a mathematical proof that randomized experiments unveil the desired causal effect or, as a more challenging example, a proof that one should not control for a covariate that lies on the pathway between treatment and effect, nor for any proxy of such covariate.

Computer scientists would not have allowed eight decades to pass without developing the mathematical notation and logical machinery needed for producing such proofs. In this sense, I am a computer scientist. And it is not the mathematical proofs per se that I aim to facilitate, but the practical questions that a careful notation can answer, if supported by the appropriate logic. For example, what covariates we control should for or what the testable implications are of a given set of causal assumptions.

In summary, I am a statistician in my aims to interpret data and a computer scientist in the formal tools that I employ toward these aims.

***RW:* Would you please describe for the uninitiated what causal inference is and how your 1988 transition from probabilistic to causal inference came to pass?**

JP: Causal inference is a methodology for answering causal research questions from a combination of data and theoretical assumptions about how the data are generated. Typical causal questions are the following: What is the expected effect of a given treatment (e.g., drug) on a given outcome (e.g., recovery)? Can data prove an employer guilty of hiring discrimination? Would a given patient be alive if he had not taken the drug, knowing that he, in fact, did take the drug and died?

The distinct feature of these sorts of questions is that they cannot be answered from (nonexperimental) frequency data alone, regardless of how many samples are taken; nor can they be expressed in the

standard language of statistics, for they cannot be defined in terms of joint densities of observed variables. (Skeptics are invited to write down a mathematical expression for the sentence, “The rooster crow does not cause the sun to rise.”)

These peculiar properties of causal questions, which have rendered them taboo in standard statistics textbooks, are emerging as exciting intellectual challenges in modern causal inference. One such challenge is the necessity of creating a new mathematical language for expressing both the research questions of interest and the theoretical assumptions upon which the answers must depend. The assumptions must be encoded in a new notation, called “causal model,” that is friendly enough to permit scrutiny by researchers and, at the same time, precise enough to permit mathematical derivation of the model’s implications. For example, the model should tell us whether the assumptions have testable implications, what those implications are, whether the queries of interest are estimable from the available data, and, if so, how.

Unknown to the uninitiated, most of these goals have been achieved recently through a friendly and embarrassingly simple symbiosis between graphical and algebraic methods. My transition from probabilistic to causal inference was triggered by the realization that people carry most of their world knowledge through causal, not probabilistic, relationships and that judgments about dependencies and independencies, so critical for the construction of graphical models, emanate from causal considerations—probabilities are just surface decorations. This is shown most vividly in Simpson’s paradox. Why else would an innocent sign reversal of associations be deemed so paradoxical by most people? The only answer we have is that people are incurably predisposed to prefer causal over associational interpretations, and the Simpson’s paradox appears paradoxical only because causal interpretations of the data rule out (both intuitively and mathematically) the possibility of sign reversal.

Another factor that prompted my transition was the realization that, unless one is a pollster or weather forecaster, investigators’ main interest lays in causal, not associational, questions. True, cultural taboos and the lack of mathematical notation have inhibited investigators from asking those questions explicitly, forcing them to pose and settle for associational substitutes. The advent of causal calculus now provides a fairly transparent understanding of the assumptions that must be made and the measurements that must be undertaken to answer such questions, and this enables statisticians to address directly the problems that their customers/users have kept dormant for decades.

RW: So, you are setting up a prize to encourage the teaching of basic causal inference in introductory statistics courses. Please tell us about the prize and long-run outcome you hope to stimulate through it.

JP: We discussed earlier the ongoing excitement in the causal inference community, and all the new problems that can be solved today using modern methods. I would like this excitement to percolate down to the education level. Just think about it. This year, there were 73 papers on causal inference listed in the JSM program. By comparison, there were only 13 such papers in JSM 2002's program.

Though it is a small sample, one cannot deny that these numbers indicate a transformative shift of focus in statistics research. Yet, this shift is hardly seen among statistics educators, and is totally absent from statistics textbooks or even from the pages of *Amstat News*. I have watched this research-education gap widening from the day causality began to come out of her closet, and I can now put my finger on its main causes—statistics instructors are reluctant to teach a topic that tradition (and authority) has branded informal, undefined, anecdotal, and controversial, if not metaphysical. And I do not blame them; I, too, would think twice before standing in front of a class to answer questions which, only a generation ago, caused terrible embarrassment to my own professors when they had to evade them. But times are changing; causality has taken on a new face, both rigorous and friendly, for every statistician to enjoy.

To narrow this gap in statistics education, I have donated part of the Turing Prize money to the American Statistical Association to establish an annual prize for a person or team that contributes substantially toward introducing causal inference in education. I hope this will stimulate the generation of effective course material, perhaps a video or a 100-page booklet that would convince every statistics instructor that causation is easy (It is!) and he/she too can teach it for fun and profit. The fun comes from showing students how simple mathematical tools can answer questions that Pearson-Fisher-Neyman could not begin to address (e.g., Simpson's paradox, covariate selection, mediation), and the profit comes from the fact we mentioned earlier—that most customers of statistics ask causal, not associational, questions.

Once we get statistics education on the side of history, a renaissance will follow. Causal analysis will become an organic territory of statistics proper, and researchers in statistics-based disciplines will be spared the psychological barriers that have been hampering our generation. ■

Pearl Sponsors Causality Award

The ASA announces a new prize, Causality in Statistics Education, aimed at encouraging the teaching of basic causal inference in introductory statistics courses.

The prize carries an award of \$5,000 per year. Donated by Judea Pearl, the prize is motivated by the growing importance of introducing core elements of causal inference into undergraduate and lower-division graduate classes in statistics.

The prize will be given by the ASA in 2013, 2014, and 2015 to a person or team that does the most to enhance the teaching and learning of causal inference in statistics. Winners will be announced on or about May 31 each year and presented with the prize at a major ASA conference.

Winners will be selected by the members of the prize committee according to the following criteria:

- The extent to which the material submitted equips students with skills needed for effective causal reasoning. These include:
 - 1a. Ability to correctly classify problems, assumptions, and claims into two distinct categories: causal vs. associational
 - 1b. Ability to take a given causal problem and articulate in some mathematical language (e.g., counterfactuals, equations, or graphs) both the target quantity to be estimated and the assumptions one is prepared to make (and defend) to facilitate a solution
 - 1c. Ability to determine, in simple cases, whether control for covariates is needed for estimating the target quantity, what covariates need be controlled, what the resulting estimand is, and how it can be estimated using the observed data
 - 1d. Ability to take a simple scenario (or model), determine whether it has statistically testable implications, and apply data to test the assumed scenario
- The extent to which the submitted material assists statistics instructors in gaining an understanding of the basics of causal inference (as outlined in 1a-d) and prepares them to teach these basics in undergraduate and lower-division graduate classes in statistics.

Nominated material can include exemplary content such as class notes, books, or chapters with associated lesson plans; excellent resources for teachers such as annotated instruction manuals; or innovative student activities with pedagogical and content notes, especially those using broadly accessible technology.

The deadline for submission is February 28, 2013. Additional information is available at www.amstat.org/education/causalityprize.

Prize Committee

Dennis Pearl (co-chair)
Judea Pearl (co-chair)
Daniel Kaplan
Maya Petersen
Michael Posner
Larry Wasserman

Six Challenges for the Statistical Community

Alan B. Krueger, White House Council of Economic Advisers Chair



Alan Krueger speaks during JSM 2012 in San Diego, California.

Thank you very much [Bob Rodriguez] for your introduction and for inviting me to give the President's Invited Lecture at the Joint Statistical Meetings this year. I also want to commend you for the theme you have set for this year's meeting: using statistics to serve a data-dependent society.

I thought I would do something a bit uncharacteristic and tell you about my background in statistics and economics and how it comes into play in my current job. I also want to use this occasion to challenge the statistical research community—or some subset of you—to work on a set of statistical problems that I have encountered in my capacity as an economic adviser.

My current job, as Bob mentioned, is serving as chair of the president's Council of Economic Advisers (CEA). When President Obama announced my nomination, he said, "I rely on the Council of Economic Advisers to provide unvarnished analysis

and recommendations not based on politics, not based on narrow interests, but based on the best evidence, based on what's going to do the most good for the most people in this country." Obviously, determining the best available evidence and what's going to do the most good for the country requires knowledge of economics and statistics.

When I started college, I had no intention of studying economics or statistics. I planned to be a lawyer, a profession in which I thought I could represent clients in need of help. I only took statistics because two semesters were required. Like many others in my class at Cornell, I feared the introductory stats course.

My course was taught by Paul Velleman, who was a student of John Tukey and a firm believer in exploratory data analysis. Fortunately, Paul appreciated that many of my classmates were math averse. He spent days describing basic ideas like the mean, median, box plot, and

stem and leaf display. He taught the resistant line, along with OLS. I discovered that these concepts were intuitive and central to understanding the world around me.

By the time he taught hypothesis testing and confidence intervals, I was hooked. I remember sending my mother, a first-grade teacher, a long letter explaining the difference between type I and type II errors and the trade-off between them with a fixed sample size. The letter had neatly drawn diagrams, showing overlapping distributions under the null and alternative hypotheses. She had no idea what I was talking about. But, to me, the idea that one could use statistics to make scientific statements and test hypotheses about economic and social phenomenon like inequality was transformative.

After Velleman's introductory courses, I took two courses from Phillip J. McCarthy on survey design and multivariate methods. (I later learned that P.J. McCarthy was the first to use Markov chain methods to model labor force flows.) These courses taught me that statistics could be used proactively, to design and carry out surveys when the appropriate data were not available.

Around the time I was taking these courses, I came to the view that the field of economics had more potential to positively address society's problems than the field of law. Economics as taught in college, however, is mainly a set of principles. These principles, while very logical and intuitive, are by and large untested. It was then that I decided my interests in statistics could

Editor's Note: This article was adapted from the President's Invited Lecture given at the 2012 Joint Statistical Meetings in San Diego, California.

be married with my excitement about economics.

Of course, there is a giant field of econometrics that does exactly this, but much of econometrics assumes the model is correct and goes about extracting the relevant parameters in the most efficient way possible. In fact, when I first took econometrics in graduate school, it took me the longest time to figure out how one could specify a likelihood function after Paul Velleman drilled into me that we should use methods that are robust to underlying distributional assumptions. The methods I was learning didn't seem like the ideal way to test theoretical models.

Anyway, in much of my research as an academic economist, I tried to identify natural experiments in which the forces of nature have conspired to produce something like a randomized experiment to test economic theories and estimate key parameters. For example, Josh Angrist and I compared wages of students who had more or less schooling depending on where their birthday fell in relation to the school start age, which influenced the grade they were in when they were no longer bound by the compulsory schooling law. Unless one believes in astrology, it seemed to me that having one's birthday fall on one side or the other of school-start-age was as close to random assignment as we were going to get in variability in educational attainment.

The problems that microeconomists are involved in mainly involve causal modeling in some way or another. But I also discovered that producing descriptive statistics on important economic phenomenon could be of enormous value, both for economics and public policy. In one classic example, Richard Freeman and Brian Hall designed a survey in 1985 to measure the number of

homeless people in the United States. Their estimates, which were highly controversial at the time, were later found to be very close to more sophisticated Census Bureau estimates.

At Princeton, I founded the Survey Research Center in 1992 to help economists and other social scientists, as well as students, collect new data. In one recent project, the survey center helped Alan Blinder and I measure the fraction of jobs that is susceptible to being offshored. And Morris Kleiner and I included questions on the same survey to measure the number of workers required to obtain a license to do their job.

My interest in surveys also intersected with another of my frustrations with econometrics—we take the data as given and try to use ever more sophisticated econometric techniques to overcome weaknesses of the data. Wouldn't it be better to collect more appropriate data? This outlook helped my colleague Orley Ashenfelter and I address a longstanding puzzle in labor economics: Research on identical twins had found that, controlling for twin-pair effects, the payoff from education was much lower than that found in the rest of the literature. One problem with this approach, identified by Zvi Griliches and others, was that identical twins had similar education levels, so any differences were likely to be dominated by measurement errors. Sophisticated econometric methods were thrown at this problem.

Ashenfelter and I decided to collect multiple measures of the twins' education. To do this, we went to the world's largest twins festival and conducted our own survey. Specifically, we separated the twins and asked them about their own and their twin's education level. So we had data from twin "i" and twin "j" on twin i's education. The correlation was

about 0.9, high, but not very high considering that the correlation between i and j's true education was around 0.6. Almost half the variance in the difference in education between pairs of identical twins was statistical noise. With the data we collected, we could do something simple, like use the average education reported by i and j to measure i's education. When we did this, our results showed a high payoff to education, like the rest of the literature. My point is that, by collecting our own data, we were able to solve a longstanding estimation puzzle.

Now I should fast-forward to the present. In my current role, I am much more of a consumer of statistics than a producer. While I was chief economist of the Treasury Department, I helped develop a confidence interval for when the government would hit the debt ceiling, but that was a rare incidence of applying statistics to a new problem. In many more situations, however, I come across problems in which I say, "Wouldn't it be nice if someone had solved this?"

Six Challenges

Let me give you six challenges that I see as very important for the statistics and policy communities.

Methods and Infrastructure

The first challenge involves developing appropriate methods and infrastructure to take full advantage of the commercial, administrative, and use-related data that are being captured at an exponential rate, with adequate privacy protections. Larger and larger caches of data are becoming available in new and ingenious ways. These include data on credit card transactions, scanner data on retail sales, Google searches for various terms, eBay bids and sales, LinkedIn members' occupational transitions, and Monster.com job listings. I'm sure this list just scratches the tip

of the iceberg, given the spread of information technology.

There is enormous potential to use these Big Data sets to cut survey costs and reduce respondent burden, to improve and expand our existing social and economic indicators and make them timelier, to assess the reliability of traditional survey data, to study network and GIS-related issues, and to answer myriad previously unanswerable questions. But the risks of misusing the data are also high.

The sampling methods I learned from P.J. McCarthy were invented in part because it was too expensive to analyze data on an entire universe and in part because the only way to get data was to go out and collect it. This is why the BLS designed the Consumer Price Index and started surveying price data during World War I. But scanners now capture an enormous volume of retail trade transactions every day. And computing power makes it possible to analyze huge quantities of data.

While the goal of sampling—to produce representative and accurate statistics—remains paramount, that goal can often be achieved more cost effectively and with more precision by using data that are administratively collected, or, more likely, by combining such data with other information.

Now, I do not mean to suggest that this process is straightforward or easy. It is not. Indeed, much of the administrative data that is captured is proprietary and nonrepresentative. There are few safeguards to ensure transparency and that the data are accurately reported and evenhandedly analyzed, and there often is little effort applied to adjust for the nonrepresentativeness of the data.

This does not stop people from using such data, however. Prominent examples include the ICSC retail chain store sales index (which represents weekly

sales from a fixed set of stores from major chains), the ADP/Macroadvisors employment projection, and various indices of help-wanted ads.

To encourage more research on Big Data, the Obama Administration launched a \$200 million Big Data initiative in March, spearheaded by the White House Office of Science and Technology Policy (OSTP) in concert with several other federal departments. As OSTP Director John Holdren said at the time, “In the same way that past federal investments in information technology R&D led to dramatic advances in supercomputing and the creation of the Internet, the initiative we are launching today promises to transform our ability to use Big Data for scientific discovery, environmental and biomedical research, education, and national security.”

The main statistical challenge for economic data and research, it seems to me, is to design ways to appropriately weight data that are collected administratively from a large but partial share of the relevant universe. In many situations, we could use statistical techniques to combine or blend the Big Data sets with more traditional survey data. In addition, noisy data will need to be filtered, and privacy must be protected. And efficient computational methods of processing data will likely be necessary.

Sample Weights in Traditional Surveys

My second challenge involves sample weights in traditional surveys. Techniques developed in this area can possibly be applied to nonsurvey data as well.

The typical private sector survey has a response rate of only around 5% to 20%, and even high-quality surveys by research institutes can have response rates around 60% or 70%. If nonresponse was unrelated to the underlying phenomenon of interest, the

response rate would not matter and the sample of respondents could be used to represent the phenomenon of interest. Interestingly, a meta-analysis of research by Bob Groves and Emilia Peytcheva that compared sample estimates to population estimates of the same parameter found that, looking across many studies, the response rate is unrelated to the estimation bias in many situations.

One conclusion I draw from this finding is that all surveys need to worry about sample weights. There is a large and well-developed literature on sample weights that mainly involves adjusting for intentional sample design features. But an equally important problem is respondent nonresponse for behavioral reasons. In practice, sample weights are often derived by rules of thumb or stepwise regression procedures. The added variability due to the uncertainty surrounding sample weights is rarely, if ever, reported and accounted for in standard errors.

We tend to exaggerate the precision of our estimates by ignoring the estimation errors introduced by nonrepresentative samples, even when we have weighted the sample by estimated sample weights.

So my suggestion is that more analytical work can be done on sample weights, and we can think about additional data that can be surveyed to assist with the development of nonresponse weights. At a minimum, the variability due to the estimation of sample weights should be routinely reported and incorporated into standard errors.

But a more ambitious agenda would be to develop methods for deriving robust sample weights. My challenge to you is to develop new techniques for deriving sample weights that are robust to various forms of nonresponse biases, or that bound the effect of nonresponse bias.

Seasonal Adjustments

A third area in need of renewed research that I want to highlight involves seasonal adjustments. There is an extensive literature on seasonal adjustments from the 1970s and 1980s, but relatively little work has been done recently. Seasonal adjustment is a particularly challenging statistical problem because the estimand is not well defined and because seasonal patterns can change.

Another challenge in economic data is to separate the business cycle from seasonal factors. This problem is exacerbated when seasonal factors evolve.

Commonly used seasonal adjustment packages take very little external information into account, such as temperature or snowfall. Research could look into the optimal way of combining external information related to seasonal movements in relevant series, especially to help model seasonal adjustment factors that could be evolving.

Advances in nonparametric and semiparametric methods, as well as computational methods, could also help to improve the estimation of seasonal adjustment factors. In addition, in applied work, attention is rarely paid to the extra variation introduced due to seasonal factors being estimated, rather than known with certainty.

Evaluation Methods

A fourth area that I would like to challenge you to conduct research involves traditional evaluation methods as applied to budget-related issues. The Office of Management and Budget (OMB) issued a landmark call for federal agencies to use evidence and rigorous evaluation in budget, management, and policy decisions to make government work more effectively. Acting Director Jeffrey Zients requested that agencies “demonstrate the use of evidence throughout their

fiscal year 2014 budget submissions” and that budget submissions “include a separate section on agencies’ most innovative uses of evidence and evaluation.” He specifically highlighted that agencies often can use administrative data to conduct rigorous evaluations, including evaluations that rely on random assignment.

Indeed, Zients’s memo stated explicitly: “One of the best ways to learn about a program is to test variations and subject them to evaluation, using some element of random assignment or a scientifically controlled design.” OMB is encouraging agencies to use waiver authority to evaluate different approaches to improving outcomes.

I want to underscore how sweeping a change this is in the operation of government. For the first time, agencies are expected to have a high-level official who is responsible for program evaluation, such as a chief evaluation officer, and agencies are invited to strengthen their evaluation capacity in the budget submissions.

CEA, together with OMB, has begun holding a series of discussions with senior policy officials and researchers in the relevant agencies to ensure that an increasing share of federal policies follow evidence-based practices.

This unprecedented initiative should be music to the ears of statisticians. While RCT methods have been employed to great effect ever since R.A. Fisher accepted a job at Rothamsted Agricultural Station, issues unique to the federal budget and government programs provide new challenges for statisticians. For example, as Paul Rosenfeld, Don Rubin, and others have shown, interpreting RCTs when there is partial compliance is not always straightforward. Furthermore, ingenuity could be used in the process of implementing waivers to produce unbiased estimates for the relevant population as a whole, as well as for

specific subsets. Another question is whether insights gleaned from randomized designed research can be optimally combined with incoming observational data on participants in ongoing programs to adjust ongoing programs in real time.

While existing statistical tools are sufficient to support this initiative, the potential for applying evaluation methods to an expansive list of programs and in new ways provides many opportunities for research and innovation.

Rise in Inequality and Decline of the Middle Class

The fifth challenge on my list concerns one of the greatest threats facing our Nation: the decades’ long rise in inequality and decline of the middle class. By any measure, the income distribution has become more kurtotic. We have gone from 50% of households earning within 50% of the median income in 1970 to 44% in 2000 and 42% today. The hollowing out of the middle class is a fundamental threat to our economy.

In the past, I have raised the concern that rising inequality is jeopardizing our tradition of equality of opportunity. One piece of evidence comes from comparing social mobility across generations and cross-sectional inequality across countries. Exploring the relationship between income mobility across generations, as measured by the slope from a regression of son’s log income on father’s log income, and inequality in the parent’s generation, as measured by the Gini coefficient for after-tax income in the mid-1980s, reveals what I call the “Great Gatsby Curve.” (See www.slideshare.net/whitehouse/the-rise-and-consequences-of-inequality-in-the-united-states-charts.) Countries that have a high degree of inequality also tend to have less economic mobility across generations.

Private-label data that are becoming available are not a substitute for core government surveys.

The rise in inequality in the United States is a concern because it portends a decline in social mobility. Our nation benefits when gifted children from low-income families have the opportunity to fully develop and exploit their talents. Yet a child from a family making less than \$35,000 a year who scores around 1100 on the SATs has a lower chance of graduating college than a less gifted child who scores around 950 on the SATs if his or her parents earn more than \$100,000 per year. (Based on calculations from the Department of Education's 2009 Beginning Postsecondary Students (BPS) longitudinal survey. All individuals in the sample began post-secondary school, and the tabulations refer to the proportion who graduated with a bachelor's degree within six years of starting. Family income is from 2002, the year before post-secondary-school enrollment.)

New research by Robert Putnam finds that children born to more affluent parents are increasingly raised in ways that lead to more nurturing and supportive environments, while there is little if any improvement for children born to less affluent parents. Since the early 1980s, for example, participation in nonsports extracurricular activities has been rising for children born in the top quartile of the SES distribution and falling for children born in the bottom quartile. There is also a growing gap based on parental education in the amount of time that parents spend with their children. These changes forebode a growing opportunities gap between children born to affluent and poor parents.

It is easy to devise theoretical models that predict that a rise in income inequality leads to a decline in intergenerational mobility. For example, in the Becker and Tomes human capital model, education of parents and their children is positively correlated. A rise in the education-earnings gradient over time therefore causes a rise in the correlation in income between parents and children. But there may be other mechanisms at work. And if we understand the mechanisms, we can design public policy initiatives to support intergenerational opportunity despite the past rise in inequality. For example, by increasing Pell grant generosity and making student loans more affordable, children of less affluent families can overcome financial obstacles to completing college.

So, my challenge is to study the mechanisms underlying the Great Gatsby Curve. If we can learn more about the channels that restrict opportunities for children from disadvantaged families, we can more effectively design and implement strategies that support economic mobility.

Financial Regulatory System

My sixth and final challenge involves our financial regulatory system. Our universities and business schools have done an outstanding job developing techniques and teaching methods for financial engineering and financial econometrics—all tools for making money. But, we have not devoted nearly as much effort to developing tools for detecting financial fraud. (One notable exception is William Christie and Paul Schultz (1994), who found that trades of NASDAQ stocks were unlikely to occur at odd eighths-of-a-dollar. Buyers were more likely to quote shares at $17 \frac{1}{2}$ or $17 \frac{3}{4}$ than at $17 \frac{5}{8}$, for example. Their statistical finding resulted in 30 securities firms eventually paying a \$910 million settlement to end a

class-action suit alleging price fixing in the NASDAQ exchange.)

There is a tremendous opportunity here. Financial regulators, notably the Commodities Futures Trading Commission (CFTC) and Securities and Exchange Commission (SEC), have reams of data flowing in on financial transactions. Their tools for financial surveillance and enforcement were recently strengthened by the Dodd-Frank Wall Street Reform Act, which, among many other things, requires new financial players such as swap dealers to register and report to the financial authorities.

We need appropriate statistical surveillance tools to analyze the massive amount of data that flows in to detect suspicious behavior, market manipulation, and collusion.

The CFTC, alone, receives from 400–600 million records on time and sales each day from more than 200,000 customer accounts. With such massive amounts of data, the regulators need cluster techniques to reduce the data into traders who follow similar strategies. Moreover, some of the traders are not people, but machine trading algorithms. Machine learning techniques are needed to reverse engineer the algorithms that the machines are using to detect whether the algorithms change, and why. Enforcement actions often result when a trader brags that he rigged prices or cornered a market, but machine algorithms do not send emails or go to bars. We need new methods to detect suspicious behavior, and I can think of no better tool than statistics.

Hidden Markov Chain and nonlinear statistical models can be developed to detect discontinuities in market behavior. In addition, financial regulators would benefit from the development of network analytic tools that link traders, banks, and payment system nodes and then determine what happens when a particular link drops out.

The regulators are eager to have more statisticians work on these problems, and vast quantities of data can be made available. What I have in mind is building a new subfield of statistics that can assist financial regulators in monitoring markets to ensure they are fair and orderly, to flag suspicious behavior, and to detect new sources of systemic risk. Someday, I hope that enrollment in financial regulatory statistics rivals that in financial engineering. The students may not be as well remunerated, but their value to society will be higher.

Conclusion

Let me conclude by emphasizing that we are meeting at a time when there is great opportunity to use statistics for the good of society. Research on the challenges that I mentioned—Big Data, sample weights, seasonal adjustment, evidence-based policy, social mobility, and statistical tools for financial market

surveillance—can serve our increasingly data-dependent country.

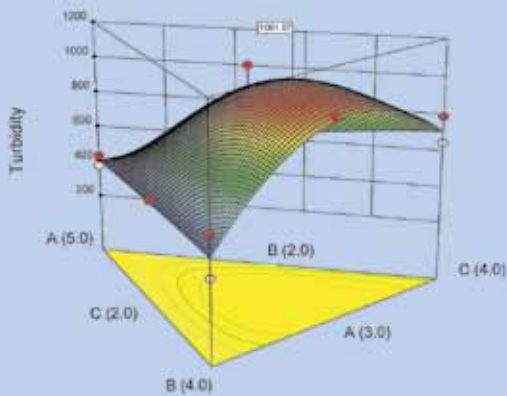
But, we are also meeting at a time when our statistical infrastructure is under pressure. A budget bill passed by the House of Representatives in May would eliminate the American Community Survey (ACS) and the economic censuses. These data sets are essential public goods that help households and businesses make better decisions. Private-label data that are becoming available are not a substitute for core government surveys. In fact, the ACS and economic censuses are even more valuable to businesses and households because they provide the scaffolding to interpret and benchmark the big private data sets that are becoming available.

Another threat we face is that special interests have been trying to reduce funding for the financial regulators to undermine the Dodd-Frank Wall Street Reform Act. If successful, this would make

it even harder to police financial manipulation and reign in systemic risk, and it would reduce the resources needed to develop and implement statistical tools to ensure that markets operate fairly and efficiently.

As a researcher, I spent much of my time and energy on methodological debates. As a policy adviser, I have learned to be much less doctrinaire about economic and statistical methods. Some tools are useful for some questions, and other tools useful for other questions. And sometimes it is useful to represent the range of estimates across a variety of methods. What matters more than I previously appreciated is the general problem to which we apply and develop tools. So, in conclusion, my last challenge to you is to pursue work in areas that, as President Obama requested, “will do the most good for the most people in this country.” ■

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New Journal on Survey Statistics and Methodology Launched

The American Statistical Association and American Association of Public Opinion Research (AAPOR) recently launched a new interdisciplinary journal, the *Journal of Survey Statistics and Methodology (JSSAM)*. The first issue is scheduled to publish in July 2013 and quarterly thereafter.

The purpose of *JSSAM* is to publish cutting-edge articles about statistical and methodological issues for surveys and censuses. It also will publish empirical and theoretical papers, applied papers, and review papers and feature three sections.

The Survey Statistics section will include papers on sampling procedures, imputation, weighting, measures of uncertainty, small-area estimation, new methods of analysis, and other statistical issues related to surveys.

The Survey Methodology section will include papers presenting methodological research, such as methodological experiments, comparisons of modes of data collection, and new uses of paradata.

The Applications section will include papers that report innovative applications of methods, provide guidance on some

practical problem, or present significant new findings.

Joseph Sedransk will be the editor for statistical papers, and Roger Tourangeau will be the editor for methodological papers.

Sedransk is professor emeritus of statistics at Case Western Reserve University.

Tourangeau is a vice president at Westat.

Oxford University Press will publish *JSSAM*. For more information, visit <http://jssam.oxford-journals.org>. Prospective authors can submit manuscripts online at <http://mc.manuscriptcentral.com/jssam>. ■



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Design and Model Selection Featured in November Issue

Hugh Chipman, *Technometrics* Editor

This issue of *Technometrics* contains an assortment of articles on design and analysis.

Increasingly, industrial experiments use multi-stratum designs, such as split-plot and strip-plot. Often, these experiments span more than one processing stage. The challenge is to identify an appropriate multi-stratum design, along with an appropriate statistical model. In “A General Strategy for Analyzing Data from Split-Plot and Multi-Stratum Experimental Designs,” **Peter Goos** and **Steven G. Gilmour** introduce Hasse diagrams as a visual tool to aid in construction. They demonstrate the approach with a large study of the adhesion properties of coatings to polypropylene for designs ranging from a simple split-plot design to a strip-plot type of design involving repeated measurements of the response.

In many industrial experiments, some factors are not independently set for each run due to cost constraints and the hard-to-change nature of the levels of these factors. Attention is usually restricted to split-plot designs in which all the hard-to-change factors are independently reset at the same points in time. This constraint is relaxed somewhat in split-split-plot designs because these require the less hard-to-change factors to be reset more often than the most hard-to-change factors. A key feature of the split-split-plot designs, however, is that the less hard-to-change factors are reset whenever the most hard-to-change factors are reset. In “Staggered-Level Designs for Experiments with More Than One Hard-to-Change Factor,” **Heidi Arnouts** and **Peter Goos** relax this constraint and present a new type of design that allows the hard-to-change factor levels to be reset at entirely different points in time.

Two-level designs are powerful tools for the identification of models with main effects and two-factor interactions. In “Model-Robust Two-Level Designs Using Coordinate Exchange Algorithms and a Maximin Criterion,” **Byran J. Smucker**, **Enrique del Castillo**, and **James L. Rosenberger** present a new set of coordinate exchange algorithms, which construct designs that maximize the number of estimable models and use a secondary, maximin criterion to encourage high efficiency with respect to the models.

In “Two-Stage Sensitivity-Based Group Screening in Computer Experiments,” **Hyejung Moon**, **Angela M. Dean**, and **Thomas J. Santner** develop a new two-stage group screening methodology for

identifying active inputs. In Stage 1, groups of inputs showing low activity are screened out; in Stage 2, individual inputs from the active groups are identified. Examples show that, compared with other procedures, the proposed method provides more consistent and accurate results for high-dimensional screening.

In robust design studies, the important noise factors are varied systematically in offline experiments and their interactions with control factors are investigated. The choice of the noise variable settings is extremely important. However, the noise distributions are rarely known, and the choices are often based on convenience. In “Noise Variable Settings in Robust Design Experiments,” **Derek Bingham** and **Vijayan N. Nair** demonstrate unintended and undesirable consequences of such choices, including identification of small dispersion effects as important, missing of large ones, and issues with parameter optimization.

Accelerated life tests provide timely information on product reliability. As product complexity increases, these studies often generate multiple dependent failure modes. In “Planning of Accelerated Life Tests with Dependent Failure Modes Based on a Gamma Frailty Model,” **Xiao Liu** incorporates the dependence between failure modes into design and modeling via a gamma frailty model. The frailty model is easily understandable and maintains mathematical tractability in the planning problem when there are more than two failure modes.

In Bayesian system reliability studies, second-stage data is aimed at obtaining a more precise estimate of the system’s reliability. The current strategy for comparing potential experimental designs is computationally intensive and time-consuming. In “Computationally Efficient Comparison of Experimental Designs for System Reliability Studies with Binomial Data,” **Jessica Chapman**, **Max Morris**, and **Christine Anderson-Cook** present a new, more computationally efficient methodology.

In “Variable Selection in Additive Models Using P-Splines” by **A. Antoniadis**, **I. Gijbels**, and **A. Verhasselt**, the nonnegative garrote is extended to a component selection method in a nonparametric additive model in which each univariate function is estimated with P-splines. The resultant procedure is computationally efficient and performs well when implemented with an appropriate parameter-selection method. ■

STATtr@k

Wanted! Statisticians in the Federal Statistical System

Roderick Little and Tommy Wright, U.S. Census Bureau

How many “principal statistical agencies” are there in the U.S. government? There are a lucky 13, actually, and they all hire statisticians!

Students with undergraduate or graduate (MS or PhD) degrees in statistics or closely related areas are not always aware of job opportunities in this sector (federal job openings can be found in *Amstat News* or on job sites such as USAJOBS.gov). U.S. citizenship is a requirement for many, but not all, federal statistics jobs; check individual postings for requirements.

Our own experience concerns the U.S. Census Bureau, the largest of the federal statistical agencies, though we emphasize that opportunities exist at other statistical agencies, too. We’d like to expose some myths about statistics in federal agencies, present some pros and cons of the federal statistical system as a potential source for rewarding job experiences and careers, and comment about current federal statistical topics that make the government sector a vibrant place to work.

Myths

- Government statistics jobs involve tedious number-crunching. In fact, problems in statistical agencies are complex and intellectually challenging. For one recent example of an interesting modeling task, see the Census Challenge competition for the Decennial Census (www.kaggle.com/clus-census-challenge). Even better, enter the competition and win a valuable prize!

- Federal agencies only hire sampling statisticians. Actually, there is a distinct trend toward increased use of modeling in statistical agencies, and people with strong statistical modeling skills, as well as statistical computing skills, are in high demand.

- Federal statistical jobs are on the decline, under the pressure of current federal budget deficits. It is true that federal budgets are tight, but there continue to be openings for qualified statisticians. Moreover, new challenges arising from measuring an increasingly complex and dynamic society and recent and continuing waves of retirements are two factors that ensure opportunities for individuals with strong statistical skills.

- Federal salaries are not competitive. Salaries for mathematical statisticians at the Census Bureau are not always at the level of industry and top academic jobs, but they are competitive and higher than you might think. In addition to offering recruitment bonuses to new graduates and new hires, we can usually match a competing written salary offer.

Pros

- You get to work on important problems that have an impact on society. High-quality information is vital for government and industry. For example, the Decennial Census is a cornerstone of our democracy, the basis for allocation of representatives to Congress, redistricting, and

Federal Statistical System

Bureau of Economic Analysis (Commerce Department)

Bureau of Justice Statistics (Justice Department)

Bureau of Labor Statistics (Labor Department)

Bureau of Transportation Statistics (Department of Transportation)

U.S. Census Bureau (Commerce Department)

Economic Research Service (Department of Agriculture)

Energy Information Administration (Department of Energy)

National Agricultural Statistics Service (Department of Agriculture)

National Center for Education Statistics (Department of Education)

National Center for Health Statistics (Department of Health and Human Services)

National Center for Science and Engineering Statistics (National Science Foundation)

Office of Research, Evaluation, and Statistics (Social Security Administration)

Statistics of Income Division (Treasury Department)

allocation of large sums of money for federal programs. Statistics based on federal statistical agency data such as the monthly unemployment rate, consumer price index, and crime and health statistics are at the center of the political debate and closely watched.

- You work in an interdisciplinary environment with smart colleagues, where your expertise is valued and important. There are also offer opportunities to interact with researchers at universities and other research institutions.
- In general, work hours are less onerous than in some other environments. There are times when you may need to work extra hours to complete a project within a deadline, but you'll also have some free time.
- Job security is generally better than in industry and academia, after a relatively short probationary period. Additional current benefits include flexible work schedules, telework, mentoring

programs, campus-like environment, fitness center, mass transit subsidy and access to Metro, thrift savings plan, subsidized health and life insurance, and free parking.

- Most federal jobs are in the Washington, DC, area, a vibrant city with diverse cultural, educational, sporting, and entertainment options.
- There is an extensive job market for federal statisticians, and hence many opportunities for advancement for strong performers.

Cons

We may be biased, but the only con that comes to our minds is ... ????

Statistical agencies face challenging problems in meeting their missions in the modern world. The mission of government statistical agencies is to produce relevant, timely, and credible statistics about key social and economic phenomena. Statistical agencies face increased demand for data products, and, as we noted earlier, the questions asked by our society are becoming increasingly complex and hard to measure.

On the other hand, individuals and organizations are less willing to respond to requests for information, voluntary or not. Sample surveys and censuses have increasing costs and are increasingly challenging to mount. Combining information from a variety of data sources is attractive in principle, but difficult in practice. Disseminating information for small geographic areas or small subpopulations is subject to dangers from disclosure of confidential information from respondents. In short, the standard statistical approach of

taking a random sample of the target population and weighting the results up to the population has limitations and additional statistical tools are needed.

The United States just conducted a census of people and housing, and the evidence suggests it was successful. However, the traditional design of the census is increasingly being questioned, because of difficulties in finding and interacting with mobile populations, nontraditional families, rapidly changing dwelling structures, increased use of the Internet over "snail mail," the increasing expense of personal interviews, and the difficulty of including people who are hard to reach or reluctant to participate. New technology offers new data collection tools, and administrative records offer some promise, but how should they be used? How can the quality of census results be measured?

The world of survey methods also is changing. New technology offers new data-collection tools, but deploying them in an optimal way is tricky. The traditional survey should be increasingly seen as one of an array of data sources, including administrative records and other information gleaned from cyberspace. Tying this information together to yield cost-effective and reliable estimates is not simple and requires modern statistical analysis tools.

Meeting these challenges requires continuous innovation, which requires scientific methods, including controlled comparisons of alternative approaches. In short, it's an exciting time to be a statistician in federal statistics, and people entering the field have the opportunity to advance this crucial statistical endeavor and make a difference. ■

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Philip Scinto



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Just one, simple, short year ago, we were anxiously anticipating the inaugural ASA Conference on Statistical Practice. Today, with one successful conference now behind us and armed with a plethora of insightful and useful feedback from the participants, we are eager for our second conference, which will take place at the Sheraton New Orleans Hotel from February 21–23, 2013, in the great city of New Orleans.

Once again, the steering committee has organized a terrific program, with talks, courses, tutorials, and posters focused on the needs of applied and consulting statisticians concerned with urgent problems, issues, and systems for clients and organizations to improve processes, products, and decisions. Due to the success of our feedback session and the drawing of door prizes at the conclusion of the inaugural conference, those events also are planned again for New Orleans. Also note that Bob Starbuck will deliver the keynote address, “Some Thoughts on How to Be More Successful,” which I can hardly wait to hear and enjoy. Please check out the program at www.amstat.org/meetings/csp/2013. Better yet, register for the conference and sign up for the courses.

Early registration for the conference closes on December 31. The housing deadline is January 25, 2013, and the conference registration deadline is February 7, 2013. Our goal is to maintain a cozy, intimate, and personal feel to the conference, so register early, before all the conference spots and courses are filled.

It is worth reminding everybody that this conference is for you. When you are in a course or attending a session, do not shy away from asking how the work presented is applied and how it can help you be a better statistical practitioner. When you attend the closing feedback session on February 23, we urge you to speak up and let us know how the conference has or has not served you, as well as offer suggestions for improvements.

Once again, we are delighted to be part of something special. Please join us at the Sheraton New Orleans Hotel in 2013! ■

Workshops Offered Prior to JMM

Jean Scott



The Consortium for the Advancement of Undergraduate Statistics Education (CAUSE) will offer three Mathematical Association of America ancillary workshops on January 8, 2013, the day preceding the 2013 Joint Mathematics Meetings at the San Diego Marriott Marquis & Marina. There is no registration fee for these workshops, though advanced registration is required.

Playing Games with a Purpose: A New Approach to Teaching and Learning Statistics

Shonda Kuiper, Grinnell College, and Rod Sturdivant, West Point Military Academy

9:00 a.m.–4:00 p.m.

This workshop is designed to help instructors and students bridge the gap between short, traditional homework questions and the open-ended nature of a real-world problem. Web-based games and other materials will be demonstrated that introduce undergraduates to statistical methods from a variety of disciplines. The materials encourage students early in their undergraduate studies to experience the role of a research scientist and understand how statistics help advance scientific knowledge. By making students grapple with intriguing real-world problems that demonstrate the intellectual content and broad applicability of statistics as a discipline, these materials will encourage students to incorporate statistical thinking into any career. These materials were developed through NSF-supported grants (NSF DUE #0510392 and NSF DUE #1043814). Participants are encouraged to bring a laptop.

Functions, Parameters, and Fitting for Teaching Calculus

Daniel Kaplan, Macalester College, and Randall Pruim, Calvin College

9:00 a.m.–4:00 p.m.

This workshop is designed to help instructors move toward teaching introductory calculus in a modeling- and data-oriented way. The parameters of basic functions are often treated casually in introductory calculus, as if they were a nuisance or merely fodder for the chain rule. In the first half of the workshop, we'll show how to interpret them

physically, how to relate them to data, and how to use them for model-building. In the second half, we will emphasize polynomial approximation, the relationship between Taylor series and model-fitting, and model-building using information about derivatives. A small, general-purpose mathematical toolkit suffices to build and interpret compelling models in a wide range of settings that span economics, biology, physics, etc. We'll provide in-class activities, assignments, student project topics, and example exam questions. Both paper-and-pencil and computer-oriented approaches (using R, Sage, or Mathematica) will be featured, drawing on the materials developed through the NSF-supported Project MOSAIC, which aims to construct strong connections in teaching modeling, calculus, statistics, and computation. Participants are encouraged to bring a laptop. If you don't currently use software for teaching calculus, we'll set you up with the free R system running through a web browser.

Identifying and Addressing Difficult Concepts for Students in the Introductory Statistics Course

Marjorie Bond, Monmouth College

8:30 a.m.–4:30 p.m.

We know students have difficulty with certain topics in statistics and it can be difficult to determine the best approach to take to help students work through these topics. In this workshop, we will take a selection of difficult concepts; zoom in on exactly what the problems are from the students' point of view; and examine where, when, and how to address them in our course. Along the way, we will examine these difficult statistical concepts in detail and look for common threads that may lead us back to issues from Chapter 1. We also will discuss the Guidelines for Assessment and Instruction in Statistics Education (GAISE) objectives for a statistically educated citizen. The workshop is particularly geared toward instructors at two-year colleges. Instructors new to teaching statistics and those who have been teaching for a while will find the workshop beneficial. Supported by NSF DUE #0942924 & 0942456. Participants are encouraged to bring a laptop.

Online registration and details are available at www.causeweb.org/workshop. Advance registration is required; confirmation of acceptance will be sent via email. ■

Deming Lecturer

Nominations are being accepted for the 2013 Deming Lecturer Award. The awardee will give the Deming Lecture (an invited paper) at the Joint Statistical Meetings and receive a \$1,000 honorarium, award plaque, and paid travel expenses.

To be considered for the award, an individual must have made significant contributions in fields related to those in which Deming devoted his career (e.g., survey sampling, statistics in the transportation industry, quality management, and quality improvement), or more broadly, have made significant contributions through effective promotion of statistics and statistical thinking in business or industry.

For more information, visit www.amstat.org/awards/deminglectureraward.cfm or contact Marilyn M. Seastrom, selection committee chair, at Marilyn.seastrom@ed.gov or (202) 502-7303.

Nominations can be sent by email to ASA Executive Secretary Pam Craven at pamela@amstat.org or by mail to the ASA office, ATTN: Award Nominations, 732 North Washington St., Alexandria, VA 22314-1943.

Noether Senior and Young Scholar

Nominations are being accepted for the 2013 Noether Senior and Noether Young Scholar awards. Visit www.amstat.org/careers/gottfriednoetherawards.cfm for more information and a nomination form. If you have questions, contact the committee chair, Pranab K. Sen, at pkzen@bios.unc.edu or (919) 966-7274.

Nominations should be sent before December 1 to Pam Craven in the ASA office at pamela@amstat.org or 732 N. Washington St., Alexandria, VA 22314, ATTN: Award Nominations. ■

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

www.amstat.org/awards

November 15, 2012

ASA Deming Lectureship

Nominations: Pam Craven, pamela@amstat.org

Questions: Marilyn M. Seastrom, marilyn.seastrom@ed.gov

December 1, 2012

ASA Noether Senior and Young Scholar Awards

Nominations: Pam Craven, pamela@amstat.org

Questions: Pranab K. Sen, pkzen@bios.unc.edu

December 15, 2012

COPSS Fisher Lectureship and Award

Kathryn Roeder

Chair, COPSS Fisher Lecturer Award Committee
kathryn.roeder@gmail.com

January 15, 2013

COPSS Presidents' Award

Raymond J. Carroll, copsspresidents2013@gmail.com

January 15, 2013

COPSS Florence Nightingale David Award

Nancy Reid, reid@utstat.utoronto.ca

January 15, 2013

COPSS George W. Snedecor Award

Nilanjan Chatterjee, chattern@mail.nih.gov

March 1, 2013

ASA Fellows

Nominations accepted online at www.amstat.org

Questions: David L. DeMets, demets@biostat.wise.edu

March 9, 2013

ASA Statistics in Chemistry Award

Philip J. Ramsey, pjrstats@aol.com

March 15, 2013

ASA W. J. Dixon Award for Excellence in Statistical Consulting

Nominations: Pam Craven, pamela@amstat.org

Questions: Mani Y. Lakshminarayanan,

Mani_Lakshminarayanan@merck.com

March 15, 2013

ASA Founders Award

Nominations: Pam Craven, pamela@amstat.org

Questions: Robert N. Rodriguez, bob.rodriguez@sas.com

March 15, 2013

ASA W. J. Youden Award in Interlaboratory Testing

Nominations: Pam Craven, pamela@amstat.org

Questions: Michael J. Messner, messner.michael@epa.gov

March 15, 2013

ASA Waller Education Award

Nominations: Pam Craven, pamela@amstat.org

Questions: June Morita, june@stat.washington.edu

March 15, 2013

Karl E. Peace Award for Outstanding Statistical Contributions for the Betterment of Society

Nominations: Pam Craven, pamela@amstat.org

Questions: Margaret A. Nemeth, margaret.a.nemeth@monsanto.com

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

sectionnews

Biometrics

Edited by Songthip Ounpraseuth, Biometrics
Section Publications Officer

Wei Sun, 2013 Joint Statistical Meetings (JSM) Biometrics Section program chair, is collecting proposals for topic-contributed sessions. If you are interested in organizing such a session, contact him at wsun@bios.unc.edu. The deadline for submitting topic-contributed session abstracts is February 2.

The section also is seeking applications for the 2013 David P. Byar Young Investigator Award. Finalists will be announced by January 15, 2013, and should contact Sun and submit a topic-contributed abstract to JSM.

In addition to the Byar award, the section may select other candidates for travel awards from the pool of papers submitted to the competition.

All travel award materials must be submitted electronically by December 1. Applications and questions should be sent to section chair, Dianne Finkelstein, at dfinkelstein@partners.org.

Finally, the section invites applications for funding to support innovative outreach projects focused on enhancing awareness of biostatistics among quantitatively talented U.S. students. The section anticipates funding up to three projects, with total funding of up to \$3,000 per project.

For details, visit <http://magazine.amstat.org/blog/category/membernews/amstatsections>.

Biopharmaceutical

Submissions are now being accepted for the 2013 biopharmaceutical student paper awards. These awards are presented annually during the section's open business meeting at the Joint Statistical Meetings.

In addition to submitting a paper for judging, winners also must submit an abstract of the work as a contributed paper for JSM. Requirements for contributed paper submission must be followed in addition to those for the student paper submission.

Papers must be submitted no later than one year after graduation and reflect research completed while a student.

Submissions also are being sought for the JSM 2013 poster award. If you plan to present a poster at JSM 2013, submit an abstract through the section by February 4, 2013. The deadline for posters is May 5, 2013. For details, see section 2.8 of www.amstat.org/sections/sbiop/OperationsManual/operate_2011.pdf.

For details about the student award and poster submission, visit <http://magazine.amstat.org/?cat=17>.

Physical and Engineering Sciences

Richard Lewis, Chemometrics Committee Chair

The 2012 Statistics in Chemistry Award was presented to Scott Allen of Novomer, Inc. and Bradley Jones of the SAS Institute, JMP Division, for their work developing novel catalysts used to sequester CO₂ by incorporating it into new thermoplastics that are up to 50% by weight CO₂.

To read more about the section's awards night, visit <http://amstat-online.org/spe/2012/09/18/awards-and-mixing-in-san-diego>. To read more about the chemistry award, visit <http://magazine.amstat.org/blog/category/membernews/amstatsections>.

Quality and Productivity

The ASA Quality and Productivity Section initiated a student scholarship program to help a student attend the Joint Statistical Meetings. This year, one \$400 scholarship was awarded to Ye Tian of Iowa State University.

Q&P will offer up to three travel awards of \$400 each for students enrolled in a graduate program with a concentration in applied statistics and/or quality management to attend JSM in Montréal, Québec, Canada, from August 3–8, 2013. The student applicants must have a demonstrated interest in quality applications, as evidenced by course work, research topic, or work experience. Applicants either presenting a paper or participating in a poster session will receive extra consideration. Contact Ming Li at limi@ge.com with questions or to request an application. Applications will be accepted February 1 to March 31, 2013.

Statistics in Epidemiology

The Section on Statistics in Epidemiology (SIE) invites nominations for the Nathan Mantel Award for lifetime contributions to the development and application of statistical science to problems and issues in epidemiology. The winner will receive \$1,000 and a plaque at the Joint Statistical Meetings (JSM) in Montréal, Québec, Canada, in August 2013.

The deadline to submit a nomination is February 1, 2013.

For details about the Mantel award and student paper award, visit <http://magazine.amstat.org/?cat=17>. ■

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

Alabama

■ Assistant Professor of Statistics - The University of Alabama-Culverhouse College of Commerce and Business Administration-Department of Information Systems, Statistics, and Management Science. Two (2) nine month tenure track positions available effective August 16, 2013. Salary, teaching load, and faculty support competitive and commensurate with qualifications and experience. Responsibilities: conduct scholarly research; teach at undergraduate and graduate levels, service. Full description at: <https://facultyjobs.ua.edu>. AA/EOE. Women and minorities are encouraged to apply.

Alaska

■ The department of mathematics and statistics at the University of Alaska Fairbanks invites applications for a tenure-track position in statistics. Minimum qualifications include a PhD in statistics or a closely related area. Duties will include teaching, research and service. The position is open until filled; files first reviewed Dec. 15, 2012. For more information or to apply, see www.uakjobs.com. AA/EOE.

California

■ RAND Corporation is seeking PhD statisticians for exciting opportunities to collaborate on multidisciplinary public policy research projects. Openings exist for recent graduates and experienced statisticians. See our ad in the September *Amstat News* for details or go to www.rand.org/statistics. Applications received by December 15, 2012, will receive priority. Applications must be submitted online following the instructions at (Job ID #3221). Send questions to Susan_Paddock@rand.org. EO/AA Employer.

■ A postdoctoral fellowship in statistical methods applied to paleoecological problems is available at the University of California Berkeley as part of a multi-institution, multidisciplinary project, the PaleON project (www.paleonproject.org). Research focuses on Bayesian spatio-temporal modeling of paleoecology/paleoclimate data. Email CV and cover letter with names/contact information of three references to mueller.51@nd.edu. Review starts October 21, 2012. Questions to Jason McLachlan (jmclachl@nd.edu) or Chris Paciorek (paciorek@stat.berkeley.edu). EOE.

Colorado

■ Assistant professor tenure-track position in statistics with emphasis in biology, starting August 2013. Candidates

Professional Opportunity listings may not exceed 65 words, plus equal opportunity information. The deadline for their receipt is the 20th of the month two months prior to when the ad is to be published (e.g., May 20 for the July issue). Ads will be published in the next available issue following receipt.

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.

Rates: \$320 for nonprofit organizations (with proof of nonprofit status), \$475 for all others. Member discounts are not given. For display and online advertising rates, go to www.amstat.org/ads.

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.

The George Washington University

Two tenured or tenure-track open rank Professorial positions to begin in Fall 2013. Primary responsibilities: teaching, research and service. Ph.D. or Doctoral degree in statistics or a closely related field. ABD applicants will be considered, but must complete all requirements for the Doctoral degree by August 1, 2013. Strong teaching and research record commensurate with desired rank. Applicants for the Associate or Full Professor positions should have a strong national and international reputation and pedagogical record in teaching, research, and mentoring. For full position announcement and to apply, please visit <http://www.gwu.jobs/postings/10945>. Review of applications will begin on January 14, 2013 and continue until the positions are filled. The George Washington University is an affirmative action/equal opportunity employer.



NORC at the University of Chicago is an independent research organization headquartered in downtown Chicago with additional offices on the University of Chicago's campus, in the D.C. Metro area, Atlanta, and Boston. With clients throughout the world, NORC collaborates with government agencies, foundations, educational institutions, nonprofit organizations, and businesses to provide data and analysis that support informed decision making in key areas including health, education, economics, crime, justice, energy, security, and the environment. Learn more about NORC's leadership and experience in data collection, analysis, and dissemination at:

www.norc.org.

NORC is actively seeking statisticians, survey methodologists, statistical programmers, data managers, survey directors, and social scientists with advanced training or experience in survey research or survey operations. New staff will be based in our Chicago, IL or Bethesda, MD offices. To apply for employment, please visit our website at:

<http://norccareers.silkroad.com>

NORC is an affirmative action, equal opportunity employer that values and actively seeks diversity in the workforce.



MINDS THAT MATTER



Located in northern New Mexico, Los Alamos National Laboratory is a multidisciplinary research institution engaged in strategic science on behalf of national security. The Statistical Sciences Group at Los Alamos National Laboratory (LANL) seeks excellent candidates for challenging careers in Statistics.

Ph.D. Statisticians

Candidates must have or be near completion of a Ph.D. in Statistics or have an equivalent combination of education and experience. These positions require knowledge of multiple areas of statistical sciences; strong statistical computing skills; and interest in diverse application areas. Successful candidates have experience developing statistical methodology in multidisciplinary collaborations and proven statistical research ability as evidenced by journal publications, technical reports, and/or conference presentations. The group values good verbal and written communication skills for collaboration with scientists in other disciplines. Top-level security clearance or ability to obtain a top-level security clearance, which normally requires U.S. citizenship, is mandatory.

The Laboratory maintains an atmosphere of intellectual freedom and offers a competitive salary and strong benefits for retirement, vacation, and health coverage.

We anticipate opportunities at entry level and above. For further details and the most current information, go to www.stat.lanl.gov or contact statsearch@lanl.gov. Response prior to December 10, 2012 is strongly encouraged.

Pushing the Frontiers of Science

For more than six decades, Los Alamos National Laboratory has challenged the frontiers of science by creatively combining basic sciences with engineering and technical advances. As one of the country's largest national laboratories, LANL is recognized as a world-class scientific and engineering institution. Operated for the DOE, the Laboratory serves the nation by advancing science and technology to make the world a better and safer place.

The Statistical Sciences Group was formed in 1967 to provide the Laboratory with a center of expertise in statistics. The group consists of 22 statistical scientists plus supporting personnel, visiting faculty, graduate students, and postdoctoral fellows. The group currently has expertise in a range of methodologies, including Bayesian methods, uncertainty quantification of computer models, design and analysis of experiments, Monte Carlo and computer-intensive methods, reliability, sample planning, spatial modeling, statistical computations, statistical graphics and visualization, and analysis of measurement systems.

Statisticians work in partnership with world-class scientists to develop and apply basic science and technology in areas such as computational science, materials science, physics, energy, geology, climate, astronomy, biology, and chemistry. In addition to questions of national security and nuclear safety and reliability, applications come from other government agencies and industrial partners. Supercomputing and simulation play a large and growing role in many of these disciplines and applications. The group's work involves development and application of statistical methodology to the scientific questions in these fields, often with a strong focus on computation. The group encourages members to publish and present their work to the wider statistical community.

Los Alamos Area

Los Alamos sits at 7,300 feet on the colorful mesas that extend from the slopes of the Jemez Mountains. The town of about 18,000 people overlooks the Rio Grande Valley with further views of the Sangre de Cristo range, which forms the southern end of the Rocky Mountains. Los Alamos is a scenic 40-minute drive from the historic and cultural center of Santa Fe. The Los Alamos area boasts unparalleled access to outdoor activities such as skiing, fishing, mountain biking, and hiking.

www.stat.lanl.gov

EOE



**Department of Health and Human Services
National Institutes of Health
National Institute of Allergy and Infectious Diseases
Biostatistics Research Branch**

The Biostatistics Research Branch at the National Institute of Allergy and Infectious Diseases is seeking candidates with a Ph.D. in statistics or biostatistics. Statisticians in the group have three main functions: conducting independent research on statistical methodology, oversight of large collaborative medical studies, and small-scale collaborations with individual researchers. Collaborative opportunities include bio-defense, HIV/AIDS, immunology, transplantation, vaccine development, and bioinformatics.

Applicants should send their resume and three references to Dean Follmann Chief BRB at dean.follmann@nih.gov. The vacancy will remain open until filled.



HHS, NIH and NIAID are equal opportunity employers



with high-quality statistics research with relevance to biological sciences, and excellence in teaching, are encouraged to apply. Full posting and online application at <http://cns.natsci.colostate.edu/employment/StatsBio>. Review begins 11/15/2012 and continues until filled. EEO/EA/AA

Connecticut

■ The Babson College Mathematics and Science Division invites applicants for a tenure-track assistant professor position starting September 1, 2013. The ideal candidate will possess a terminal degree in statistics, analytics, or related field or expect to complete the requirements for the degree by September 1, 2013, a proven teaching record with the desire to deliver statistics and analytics courses, and a strong research agenda. www.Click2Apply.net/bj9fg6y. EOE.

■ The Babson College Mathematics and Science Division invites applications for a September 1, 2013, appointment at the rank of professor or associate professor if the candidate will soon be ready for promotion to professor. This position will include an initial three year appointment as division chair with the possibility of a three-year extension. Apply at: <https://babson.peopleadmin.com>. EOE.

Tenure Track Professor Positions

The Department of Statistics at North Carolina State University in partnership with the Chancellor's Faculty Excellence Program invites applications for tenure track (Assistant/Associate/Full Professor) positions. These positions are part of the NC State Chancellor's "Faculty Excellence Program," a cluster hire program that marks the first major initiative of the university's 2011-2020 strategic plan "The Pathway to the Future." Starting in 2012, NC State will hire thirty-eight faculty members across twelve research areas, or "clusters," to promote interdisciplinary scholarship and the development of innovative curricula in emerging areas of strategic strength. Inclusiveness and diversity are academic imperatives and thus are university goals. We are particularly interested in candidates who have experience working with students from diverse backgrounds and a demonstrated commitment to improving access to higher education for students from underrepresented groups. Explore the Chancellor's Faculty Excellence Program and the twelve clusters at: <http://ncsu.edu/workthatmatters>.

Forensic Statistics: This cluster is hiring four tenure-track or tenured faculty. It is anticipated that one of those positions will be housed in the Statistics Department, and the successful applicant will work closely with faculty in the Forensic Sciences Institute (for more information, see: <http://fsi.ncsu.edu>). Senior applicants are expected to have some knowledge and expertise in an area of forensic statistics. Junior applicants are expected to have serious interest in developing research and courses in forensic statistics. To apply, please visit <https://jobs.ncsu.edu> and designate position number 00102577.

Data-Driven Science: With a growing national interest in large-scale data enabled sciences, NC State University is uniquely postured to become a national leader through its innovative Institute for Advanced Analytics and cluster economy centered on "big data" in Research Triangle Park. This cluster is hiring four faculty members, with the successful statistics applicant having expertise in statistical computing, analytics and data mining. To apply, please visit <https://jobs.ncsu.edu> and designate position number 00102644.

Bioinformatics: Three tenure-track or tenured faculty positions are available in the Bioinformatics Research Center, an interdisciplinary research center that includes a dozen faculty from Statistics, Genetics, Computer Science, and other departments. The Center also houses roughly 25 students in the Bioinformatics Graduate Program. Any of these three positions could have home appointments in the Department of Statistics. To apply, please visit <https://jobs.ncsu.edu> and designate position number 17RJB01.

For more information about the department, visit <http://www.stat.ncsu.edu>. To discuss your potential interest in any of these positions, please do not hesitate to contact Peter Bloomfield, Statistics liaison for these positions, (919) 515-1913, peter_bloomfield@ncsu.edu or the appropriate cluster coordinator David Hinks, Forensics; Randy Avent, Date-Driven Science or David Bird, Bioinformatics.

AA/EOE. In addition, NC State University welcomes all persons without regard to sexual orientation. Persons with disabilities requiring accommodations in the application and interview process please call (919) 515-3148.

District of Columbia

■ RAND Corporation is seeking PhD statisticians for exciting opportunities to collaborate on multidisciplinary public policy research projects. Openings exist for recent graduates and experienced statisticians. See our ad in the September *Amstat News* for details or go to www.rand.org/statistics. Applications received by December 15, 2012, will receive priority. Applications must be submitted online following the instructions at (Job ID #3221). Send questions to Susan_Paddock@rand.org. EO/AA Employer.

Florida

■ The Department of Statistics at the University of Florida, College of Liberal Arts & Sciences, invites applications for tenure-track assistant professor to begin 8/16/2013. Duties include teaching, service and methodological research. PhD in statistics or a related field is required. Submit a vita, transcripts and three reference letters to Statistics Search Committee, PS#00009881, P.O. Box 118545, Gainesville, FL 32611-8545. Review of applications begins on 12/10/2012. Candidates for employment are subject to a pre-employment screening which includes a review of criminal records,

Frey Family Endowed Chair Quantitative Finance

Stony Brook University's Department of Applied Mathematics and Statistics is soliciting applications for the Frey Family Endowed Chair of Quantitative Finance, a tenured professorship. Candidates must have a distinguished reputation for research and graduate training in mathematics, statistics or operations research and its application to the theory and practice of quantitative finance. The endowed chair will direct the department's growing quantitative finance program (currently 60 master's and PhD students) and must articulate a strong vision for the development of a quantitative finance program and outreach to the leaders in the investment community.

The department is ranked among the top 10 applied mathematics departments in the U.S. Its 22 full-time and 15 adjunct faculty have a broad array of research interests and collaborations in applied mathematical sciences. It has access to several high-performance computers, including a 100Tf Blue Gene system. The department graduates about 18 PhD, 55 MS and 110 BS degrees annually. The University is located 60 miles from Manhattan and one mile from the headquarters of Renaissance Technologies. Review of applications will begin in Fall 2012 and will continue until the position is filled.

For a full position description, application procedures or to apply online, visit www.stonybrook.edu/jobs (Ref. #: F-7442-12-08-S) or submit a New York State employment application, cover letter, curriculum vitae and statement of research by mail to: Professor W. Brent Lindquist, Chair, Department of Applied Mathematics & Statistics, Stony Brook University, Stony Brook, NY 11794-3600; or by email to b.lindquist@stonybrook.edu. In addition, please arrange for three letters of professional reference to be sent directly to Prof. Lindquist.



Stony Brook University

Stony Brook University/SUNY is an affirmative action, equal opportunity educator and employer.



HARVARD UNIVERSITY DEPARTMENT OF STATISTICS

The Department of Statistics at Harvard University invites applications for two open-rank, open-field positions for the 2013-14 academic year. We seek exceptionally strong candidates at all levels and in any field of statistics and probability, as well as in any interdisciplinary areas where innovative and principled use of statistics and/or probability is of vital importance.

At the tenure-track level, we seek candidates with strong doctoral records and exceptional teaching and research experience or with the promise of achieving such distinction. At the tenured level (professor), we seek candidates who are internationally renowned scholars with well demonstrated excellence in research, advising, and teaching.

Applications should include a cover letter, a *curriculum vitae*, evidence of teaching excellence (e.g., course evaluations, if available), statements of teaching and research interests, and representative publications.

Applicants interested in applying for a tenured (Full Professor) appointment should submit these materials, along with contact information for at least five references at <https://academicpositions.harvard.edu/postings/4308>. Letters of nomination from third parties are also welcome.

Tenure-track applicants should submit these materials and arrange for three references to be sent to <https://academicpositions.harvard.edu/postings/4297>.

Submission of an application by January 4, 2013, will ensure consideration during the current academic year.

We especially encourage applications from, and nominations of, women and underrepresented minority candidates. Harvard University is an Affirmative Action/Equal Opportunity Employer.



TEXAS TECH UNIVERSITY
Health Sciences Center
Paul L. Foster School of Medicine*

Tenure-Track Faculty Position

The Division of Biostatistics and Epidemiology at the Texas Tech University Health Sciences Center's Paul L. Foster School of Medicine at El Paso seeks highly qualified applicants for a full-time tenure-track biostatistics and epidemiology faculty position at the Associate Professor level. The position will report to the Chief of the Division of Biostatistics and Epidemiology and will hold a faculty appointment at the Paul L. Foster School of Medicine.

The city of El Paso is nestled between the beautiful Franklin Mountains and the Rio Grande with over 300 days of sunshine a year. Ranked as the 2nd Safest City in America with a population of more than 500,000, the community offers a vibrant city life at an affordable cost of living, with excellent collaboration opportunities with the University of Texas at El Paso and William Beaumont Army Medical Center.

Applicants must have a doctoral degree in Biostatistics, Statistics, Epidemiology or related field, strong communication and presentation skills, evidence of ability to conduct independent research and collaborate with research team/multiple investigators, regional or emerging national reputation in the area of biostatistics/epidemiology, and a successful track record of teaching or mentoring. Preferred Qualifications include record of peer-reviewed publications, record of collaborative research, record of scientific presentations and consultations, and a successful track record in teaching.

The successful candidate will be expected to collaborate with pre-clinical and clinical researchers to enhance research opportunities, conduct and direct independent research in biostatistics and epidemiology, complement the success of existing research programs and mentor junior faculty, research staff and students, and design and analyze pre-clinical (laboratory and animal), clinical and epidemiologic studies.

Salary, academic rank and tenure option are commensurate with qualifications and experience. A comprehensive benefits package is included. Interested candidates must apply online at <http://jobs.texas-tech.edu>, requisition #84667. For further information, potential applicants may inquire confidentially to:

Patrick Tarwater, PhD, Search Committee Chair
Professor and Chief, Division of Biostatistics & Epidemiology
patrick.tarwater@ttuhsc.edu

The position is open until filled. Application review will begin immediately. Texas Tech University Health Sciences Center is an Equal Opportunity/Affirmative Action Employer.

reference checks, and verification of education. The University of Florida is an Equal Opportunity Institution.

Illinois

■ The Buehler Center on Aging, Health & Society at the Feinberg School of Medicine seeks a codirector of methodology/informetrics. Tenure-track assistant/associate full-time professorship. Candidate will have an MD or PhD, evidence of research productivity, ability to attract external funding, versatility in research methodology, and skill in consulting on research issues. Send CV, letter of interest, references, and writing sample to: Michelle Grana, administrative director, MGrana@northwestern.edu. AA/EOE.

Indiana

■ Department of Statistics, Indiana University, Bloomington, seeks assistant professor. Require PhD in statistics or related field, active research program, commitment to teaching. Special consideration to Bayesian, high-dimensional, nonparametric data analysis. Send cover letter, CV, research/teaching statements, 3 recommendation letters (PDF preferred) to Katie Bowman: katibowm@indiana.edu. Apply by November 16 to ensure consideration. Search continues until position is filled. EOE.



The University of Chicago Booth School of Business

The University of Chicago Booth School of Business is seeking to appoint outstanding scholars to tenure-track positions in Econometrics and Statistics.

Applications are invited from individuals who have earned a PhD (or equivalent) or expect to receive a doctorate in the near future. Members of our faculty are expected to conduct original research of exceptionally high quality, to teach effectively, and to participate in and contribute to the academic environment. Junior candidates will be judged on potential, and we will rely heavily on the advice of established scholars.

Each candidate should submit a curriculum vitae, a sample of written work, and the names of at least two scholars qualified and willing to evaluate the candidate's ability, training, and potential for research and teaching. Applications will be accepted online at <http://facultyapply.chicagobooth.edu>. We will start formally reviewing applications on December 1, 2012 and strongly encourage you to complete your application by then. We will continue to accept applications until March 16, 2013.

The University of Chicago is an Affirmative Action/Equal Opportunity Employer.



University of Massachusetts Amherst

School of Public Health and Health Sciences

Assistant Professor in Biostatistics

The School of Public Health and Health Sciences at the University of Massachusetts Amherst (www.umass.edu/sphhs/) is seeking applicants for a position in Biostatistics at the Assistant Professor level.

Position: The successful candidate will join the faculty in the Division of Biostatistics and Epidemiology, Department of Public Health. Responsibilities will include research, teaching, at both the graduate level and the undergraduate level; and advising masters and doctoral students enrolled in our MS, MPH, and PhD programs. The candidate will be expected to develop his or her own research program, secure external funding, and engage in collaborative research with other faculty from programs and departments within the School and University. The Division of Biostatistics and Epidemiology has an active teaching/research faculty consisting of nine biostatisticians and seven epidemiologists. Program members collaborate extensively with faculty from the School of Public Health and Health Sciences, other departments on campus, the University's Medical School, and Baystate Medical Center. The University is located in the scenic Pioneer Valley of Western Massachusetts, which is home to five colleges (Amherst College, Hampshire College, Mount Holyoke College, Smith College and the University of Massachusetts) with easy access to several major metropolitan areas. The University of Massachusetts School of Public Health and Health Sciences is committed to increasing the number of minorities and women on its faculty and welcomes applications from such candidates.

Qualifications: Candidates for this position must meet the following minimum requirements:

- Terminal degree (PhD, ScD) in biostatistics or related field of study;
- Evidence of independent and collaborative research potential; and
- Demonstrated interest and ability in teaching at the graduate level.

First Review: The application review process will begin November 1, 2012 and will continue until the position is filled. Anticipated start date is September, 2013.

Salary/Benefits: Salary commensurate with academic rank and experience.

Applications: Interested candidates should send their curriculum vitae, description of research and teaching interests, and three letters of reference to: Dr. Andrea Foulkes, Search Committee Chair, Search #R44009, 404 Arnold House, 715 North Pleasant Street, University of Massachusetts, Amherst, MA 01003-9304. Phone: (413) 545-1881; Fax: (413) 545-1645; Email: Foulkes@schoolph.umass.edu.

The University of Massachusetts is an Affirmative Action/Equal Opportunity Employer. Women and members of minority groups are encouraged to apply.

Iowa

■ Tenure-track assistant professor of actuarial science starting August 2013. Required: PhD as of 8/21/13; strong research, teaching potential; interest in research collaboration. Preferred: a fellowship or associateship in a professional actuarial society; industrial experience. Details at www.stat.uiowa.edu. Selection begins 12/31/12. Submit application online at <http://jobs.uiowa.edu> (Requisition #61497). AA/EOE.

■ The Department of Biostatistics in the College of Public Health at The University of Iowa invites applications for a tenure-track assistant professor with expertise in analysis of genetic data and/or genomic sequencing (Requisition #61511). Applications are also invited for a clinical-track assistant professor (Requisition #61514) with interest in collaborative clinical trials. See <http://jobs.uiowa.edu> for complete position descriptions and electronic application information. AA/EOE.

Kentucky

■ Department of Bioinformatics and Biostatistics, University of Louisville, invites applications for a second tenure-track assistant professor position starting August 2013. A PhD in biostatistics/statistics or a related discipline with collaborative experience is required. Screening begins on January 1, 2013. Please apply online at <http://louisville.edu/hr/employment/applicants>, Job Opening ID 28609. Please send three reference letters and a cover letter to Lynne Dosker (lynne.dosker@louisville.edu). AA/EOE

■ Northern Kentucky University. Chair, department of mathematics and statistics starting July 1, 2013. Primary responsibilities: managing department affairs and planning, encouraging growth and faculty development. PhD in mathematics or statistics or a PhD or EdD in mathematics education; a record adequate for at least associate professor; evidence of excellence in teaching and scholarship and of potential for administration and leadership. Details and application <http://math.nku.edu>. AA/EOE.

Massachusetts

■ Massachusetts Institute of Technology Department of Mathematics is seeking to fill combined teaching and research positions as instructor, assistant professor and higher, in statistics beginning September 2013. Appointments based mainly on exceptional research qualifications. PhD required by employment start date. Submit online at www.mathjobs.org. CV, research description,

three recommendation letters. Applications should be complete by December 1, 2012. AA/EOE.

■ Boston University Department of Mathematics and Statistics invites applications for tenure-track statistics assistant professor. PhD required. Begins July 2013, subject to final budgetary approval. Commitment to research and teaching is essential. Submit cover letter, CV, research statement, teaching statement, four recommendation letters, one addressing teaching to: Statistics Search, Mathematics and Statistics, Boston University, 111 Cummington St., Boston, MA 02215. Alternatively, visit mathjobs.org. Deadline 1/2/2013. AA/EOE.

New Jersey

■ The statistics department of Rutgers University seeks to hire one tenure-track assistant professor. We are particularly interested in candidates with research and teaching in "big data" - problems concerning data whose scale and diversity challenge theory and practice of statistics and/or computer science. Applicants must have a doctoral degree by fall 2013. Responsibilities include research, establishing external research funding, teaching and academic advising. Apply online: (<https://secure.interfolio.com/apply/16897>). AA/EOE.

New York

■ New York University Stern School of Business Statistics Group, tenure-track assistant professor appointment in statistics. Candidates should have evidence of boundary-spanning interests across fields that reflect significant interfaces of statistics with areas of relevance in a business school. Expected that candidate will be productive researcher and effective teacher at both undergraduate and graduate levels. See <http://tinyurl.com/8cv8d6n> for full details, including information on application procedure. www.stern.nyu.edu/ioms. AA/EOE.

North Carolina

■ University of North Carolina at Greensboro, Department of Mathematics and Statistics: Tenure-track position (#14130) in statistics at the rank of assistant/associate professor beginning 8/1/2013. Candidates should hold or anticipate a PhD in statistics or closely related area by appointment date. Review of applications will begin December 15, 2012. For questions, write to search chair Sat Gupta (sngupta@uncg.edu). Details at www.uncg.edu/mat. UNCG is an

EEO/AA employer with a strong commitment to increasing faculty diversity.

Ohio

■ Tenure-track assistant professor of statistics, Miami University. Requires PhD in statistics/biostatistics by start date, August 2013. Send CV, transcripts, research description, teaching philosophy, and four recommendation letters to Search Committee, Department of Statistics, Miami University, Oxford, OH 45056. Screening begins November 15, 2012. Department/position info: www.MiamiOH.edu/statistics. Right to Know - Consumer Information: www.MiamiOH.edu/righttoknow. Miami University is an EOE/AA employer with smoke-free campuses.

■ Tenure-track assistant professor of applied statistics, Lindner College of Business, University of Cincinnati, starting fall 2013. PhD (or nearly resolved ABD) in statistics or closely related discipline; demonstrate success or high potential in producing excellent research and effective teaching. Submit applications through www.jobsatuc.com/applicants/Central?quickFind=82666 (212UC1456), and inquiries to Professor Yu, StatSearch.UC@gmail.com. We will continuously review applications starting November 30, 2012, until the position is filled. AA/EOE.

■ Assistant Professor, Business Analytics. To teach, advise students, maintain active scholarship, provide service to the profession and university. Require: doctorate in business analytics, statistics, or closely related discipline, or dissertation in process (degree completion by December 31, 2013). Prefer: graduate degree from a business school or business experience; previous success in teaching. Cover letter, CV, evidence of teaching effectiveness/potential to: www.fsb.muohio.edu/employment/BA_AssstProf. AA/EOE.

■ The Ohio State University Statistics Department invites applications for two open-rank positions and one tenure-track assistant professor position beginning autumn semester 2013. PhD in statistics or related area and excellence in teaching and research are required. Professor position is targeted to interest in spatial and spatial-temporal analysis and/or applications in environmental systems or environmental-human interacting systems. One open-rank position is targeted to interest in computational probability and is joint with the department of mathematics; the second

toward modern statistics with special attention to the social and behavioral sciences. Apply at www.academicjobs.org. EEO/AA Employer.

■ 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. AA/EOE.

Pennsylvania

■ 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: hirer@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 until positions closed. Women and minorities are encouraged to apply. AA/EOE.

■ The statistics department at Temple University seeks a tenure-track, senior assistant/associate professor. Candidates in any area of statistics must have a PhD in statistics, publications in top-tier journals, teaching excellence, and strong theory/application background. Apply electronically to Sanat Sarkar, stat.recruiting@temple.edu, with cover letter, CV, teaching evidence & three recommendation letters. For more information, www.fox.temple.edu/dept/statistics. AA/EOE.

■ RAND Corporation is seeking PhD statisticians for exciting opportunities to collaborate on multidisciplinary public policy research projects. Openings exist for recent graduates and experienced statisticians. See our ad in the September *Amstat News* for details or go to www.rand.org/statistics. Applications received by December 15, 2012, will receive priority. Applications must be submitted online following the instructions at www.rand.org/statistics/jobs.html (Job ID #3221). Send questions to Susan_Paddock@rand.org. EO/AA Employer.

■ Possible teaching-track position. Collegial environment emphasizing disciplinary and cross-disciplinary research and teaching.

Possibilities and Probabilities

If working in an environment that values individuality and diversity and allows you to innovate, engage in problem solving, and achieve your professional goals appeals to you, then the Census Bureau is the place for you.

Your work as a Mathematical Statistician at the Census Bureau

- Design sample surveys and analyze the data collected.
- Design and analyze experiments to improve survey questionnaires and interview procedures.
- Improve statistical methods for modeling and adjustment of seasonal time series.
- Perform research on statistical methodology that will improve the quality and value of the data collected.
- Publish research papers and technical documentation of your work

Requirements

- U.S. citizenship
- Bachelor's, Master's or Ph.D with at least 24 semester hours in math and statistics (see website for more specifics on required coursework)

Apply at www.census.gov, click on Jobs@census, Headquarters and NPC Employment Opportunities, Mathematical Statistician

The U.S. Census Bureau is an Equal Opportunity Employer.

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U.S. Department of Commerce,
Economics and Statistics Administration,
U.S. Census Bureau



Bureau of Labor Statistics

ASA, in cooperation with the Bureau of Labor Statistics (BLS) under a grant from the National Science Foundation (NSF) is pleased to announce a Senior Research Fellow Program for 2013. Fellows will conduct research in residence at BLS in Washington, DC, use BLS data and facilities, and interact with BLS staff. Applications are due by January 20, 2013. More information is available on the BLS website at http://www.bls.gov/osmr/asa_nsf_bls_fellowship_info.htm or in our brochure at <http://www.amstat.org/careers/pdfs/ASANSFBLSFellowshipProgram.pdf>.

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.

■ Penn State Statistics Department - Faculty Positions. Multiple tenure-track positions at all levels available in statistics department beginning August 2013. PhD in statistics or related field, excellent research and teaching credentials; particulars at www.stat.psu.edu. Please apply at mathjobs.org. Screening begins November 15. Employment will require successful completion of background check(s) in accordance with university policies. Penn State is committed to affirmative action, equal opportunity and the diversity of its workforce.

■ Temple University School of Medicine - faculty-level biostatistician to provide biostatistical collaboration and consultative



GEISEL
— SCHOOL OF —
MEDICINE
AT DARTMOUTH

Professor of Biostatistics - Geisel School of Medicine at Dartmouth

The Geisel School of Medicine at Dartmouth is seeking a senior Biostatistician, at the rank of Associate or Full Professor, to conduct innovative methodological and collaborative research, mentor faculty, and teach biostatistics within the Norris-Cotton Cancer Center and other academic units throughout the Geisel School. Under the newly named Geisel School, there is strengthened

focus, and expanding faculty, in Biostatistics at Dartmouth under the leadership of Dr. Chris Amos. Additionally, an innovative new Quantitative Biomedical Sciences graduate program commenced in the fall 2011 as the first of its kind in the country. There are currently eight full-time, and several part-time, statistical faculty members at the Geisel School, along with twenty-two master's levels statistical analysts who are engaged actively in extramurally-funded statistical and biomedical research. Current interests of faculty in statistical methods include: clinical trials, measurement error methods, biomedical imaging, genomics and molecular epidemiology, survival analysis, multivariate models, spatial statistics in epidemiology, semi-parametric methods, longitudinal methods, diagnostic testing, optimal epidemiologic design, and prevention and therapeutic trials.

Founded in 1797, the Geisel School of Medicine at Dartmouth draws on the resources of Dartmouth College and Dartmouth-Hitchcock Medical Center for broad interdisciplinary programs in biomedical research, education, patient care and service. Located in rural New Hampshire, the region uniquely offers idyllic landscapes and recreation, along with outstanding schools and cultural activities.

Applicants should have a doctoral degree in biostatistics or statistics and have nationally and/or internationally recognized contributions to statistical methods, statistical education, and multi-disciplinary collaborative research. In addition to significant experience in biostatistics, preferably with a translational or molecular-genetic focus, applicants should possess a track record of NIH research funding.

Submissions should include a letter of intent, curriculum vitae, and names and contact information for three references. Review of applications will commence immediately and will continue until positions are filled.

Salary Range: Competitive

Benefits: Outstanding benefits package and faculty development support.

For more information on the Section of Biostatistics and Epidemiology:

<http://bio-epi.hitchcock.org>

For more information on the Quantitative Biomedical Sciences graduate program: <http://iqbs.org/>

The Geisel School of Medicine at Dartmouth is an Equal Opportunity and Affirmative Action Employer. We welcome applications from, and will extend equal opportunity to, all individuals without regard for gender, race, religion, color, national origin, sexual orientation, age, disability, handicap or veteran status.

Applicant materials should be e-mailed or mailed to:
Biostatistics Professor Search
The Geisel School of Medicine at Dartmouth
Attention: Crystal Flaherty
One Medical Center Drive
7927 Ruben Building
Lebanon, New Hampshire 03756
Crystal.Flaherty@Dartmouth.edu

services to investigators in the formulation, design, conduct, analysis, publication of research projects. Required: Doctoral degree in biostatistics, statistics, related quantitative discipline; familiarity with standard statistical packages. Cover letter and CV to: Ana Francia, TUSM Office of the Senior Associate Dean for Research, 3500 N. Broad Street, 974B, Philadelphia, PA 19140, ana.francia@temple.edu. Temple University is an affirmative action/equal opportunity employer and strongly encourages applications from women and minorities.

Texas

■ The department of mathematics and statistics invites applications for a tenure-track assistant professor position in statistics beginning fall 2013. A PhD degree is required. Apply for position number T96800 at <http://jobs.texasstate.edu>. Include AMS standard cover sheet and vita. Have three letters of reference sent to Alex Wang, Hiring Committee Chair, Department of Mathematics and Statistics, Texas Tech University, Lubbock, TX 79409-1042. Review will begin immediately. AA/EO.

WILLIAMS COLLEGE Assistant Professor

The Williams College Department of Mathematics and Statistics invites applications for a tenure-track position in statistics, beginning fall 2013, at the rank of assistant professor (in an exceptional case, a more advanced appointment may be considered). We are seeking a highly qualified candidate who has demonstrated excellence in teaching and research, and who will have a Ph.D. by the time of appointment. The candidate will become the fourth tenure-track statistician in the department, joining a vibrant and active statistics group. Williams College is a private, residential, highly selective liberal arts college with an undergraduate enrollment of approximately 2,000 students. The teaching load is two courses per 12-week semester and a winter term course every other January. In addition to excellence in teaching, an active and successful research program is expected.

To apply, please send a vita and have three letters of recommendation on teaching and research sent to the Hiring Committee, Department of Mathematics and Statistics, Williams College, 18 Hoxsey Street, Williamstown, MA 01267. Teaching and research statements are also welcome. Evaluations of applications will begin on or after November 15 and will continue until the position is filled. All offers of employment are contingent upon completion of a background check. Further information is available upon request. For more information on the Department of Mathematics and Statistics, visit <http://math.williams.edu/>.

Williams College is a coeducational liberal arts institution located in the Berkshire Hills of western Massachusetts with easy access to the culturally rich cities of Albany, Boston, and New York City. The College is committed to building and supporting a diverse population of approximately 2,000 students, and to fostering an inclusive faculty, staff and curriculum. Williams has built its reputation on outstanding teaching and scholarship and on the academic excellence of its students. Please visit the Williams College website <http://www.williams.edu/>. Beyond meeting fully its legal obligations for non-discrimination, Williams College is committed to building a diverse and inclusive community where members from all backgrounds can live, learn, and thrive.



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Assistant Professor Position Department of Statistics University of South Carolina

The Department of Statistics at the University of South Carolina invites applications for a tenure-track Assistant Professor. The research focus for this position will be in highly-structured data analysis. For details, see www.stat.sc.edu. Deadline for submission of application materials is December 31, 2012. Send application to

Faculty Search Committee, Department of Statistics,
University of South Carolina,
Columbia, SC 29208.

The University of South Carolina is an affirmative action, equal opportunity employer. Minorities and women are encouraged to apply. The University of South Carolina does not discriminate in educational or employment opportunities or decisions for qualified persons on the basis of race, color, religion, sex, national origin, age, disability, sexual orientation or veteran status.

■ The department of mathematical sciences, The University of Texas at El Paso, invites applications for a tenure-track position at the assistant/associate professor level starting fall 2013. The department is seeking someone who will develop an independent research program in statistics and teach undergraduate/graduate courses in statistics. Opportunities exist to participate in consulting and collaborative research through the Statistical Consulting Laboratory www.statlab.edu. More information: www.utep.edu/employment. AA/EOE.

■ The department of statistical science at Baylor University is seeking applicants for an assistant/associate professor position, beginning August 2013. Candidates must hold a PhD in statistics or biostatistics, and be committed to excellence in research, teaching, and service. Applicants should submit a letter of intent, vitae, transcripts, and three letters of reference to statistics-search-12@baylor.edu. Completed applications ensure full consideration if received by November 1, 2012. AA/EEO.



Making Cancer History[®]

The Department of Biostatistics within the Division of Quantitative Sciences at The University of MD Anderson Cancer Center is seeking candidates for one or more open rank tenured or tenure-track faculty positions. The department invites applications from individuals who have made outstanding contributions in the development of statistical methodology and its applications to biomedical research. We are particularly interested in candidates who have strong interests in crossdisciplinary and collaborative scientific research. A Ph.D. in statistics, biostatistics or a related field is required.

The Department of Biostatistics has 27 faculty members, 36 master's and doctoral-level research analysts and 11 postdoctoral fellows. Faculty members are actively involved in collaborative and methodological research in diverse areas such as clinical trial design, Bayesian methodology, mathematical modeling of biological systems, decision models, cancer screening, bioinformatics, genomic pathway analysis, integrative modeling of multiple types of complex data, including high-dimensional genomic data, functional data analysis, data subject to biased sampling, image data analysis, survival analysis, statistical genetics, high-performance computing and health services research. Faculty members also have opportunities to participate in the affiliated biostatistics doctoral programs at the University of Texas, Texas A&M University and Rice University. The department is supported by the resources of the Division of Quantitative Sciences, which include a strong and active IT team with specialties in database design, web-based clinical trial support, scientific programming and software engineering. The division also includes the Department of Bioinformatics and Computational Biology, through which additional collaborative opportunities exist with 18 faculty members, 19 master's and doctoral-level research analysts, and 11 postdoctoral fellows. Information about the department and programs offered can be found at <http://www3.mdanderson.org/depts/biostatistics/>. Further questions regarding the positions may be directed to Prof. Jeffrey S. Morris (jefmorris@mdanderson.org).

MD Anderson Cancer Center offers competitive salaries and an outstanding personal and professional benefits package. Houston is one of the world's most innovative and diverse cities, nurturing great neighborhoods, competitive private and public schools, an exceptional music and theater scene, highly acclaimed museums, international cuisine and year-round outdoor recreational activities.

Consideration of applications will continue until the positions are filled. Interested applicants should email (or mail) a copy of their CV, a statement of research accomplishments and interests, PDF versions of their top three publications (or, for junior candidates, excerpts from their dissertation), and the names, addresses (including email) and phone numbers of three references to: biostat-search@mdanderson.org

MD Anderson Cancer Center is an equal opportunity employer and does not discriminate on the basis of race, color, national origin, gender, sexual orientation, age, religion, disability or veteran status except where such distinction is required by law. All positions at The University of Texas MD Anderson Cancer Center are security sensitive and subject to examination of criminal history record information. Smoke-free and drug-free facility.

Open Rank Faculty Positions – Department of Biostatistics

Faculty Search Committee
Department of Biostatistics
Unit 1411
The University of Texas
MD Anderson Cancer Center
P. O. Box 301402
Houston, TX 77230-1402

Utah

■ The department of mathematics at the University of Utah invites applications for the following faculty positions: full-time tenure-track or tenured appointments at the level of assistant, associate, or full professor in all areas of mathematics and statistics. Applications must be completed through the website www.mathjobs.org/jobs/Utah, and will be accepted until the position(s) have been filled. The University of Utah is an Equal Opportunity/Affirmative Action employer and educator.

■ MS Biostatistician II. The Study Design and Biostatistics Center at the University of Utah is seeking an MS or applied PhD statistician to participate in biostatistical collaborations with clinical and translational investigators. Requirements include skills in data analysis, superb communications skills, interest in new statistical methods, and proficiency in statistical programming. Send resume, letter of interest, and names of references to Camie.Derricott@hsc.utah.edu. AA/EOE.



BIostatISTICS FACULTY POSITION (TENURE TRACK) Department of Pediatrics at the University of Arkansas for Medical Sciences & Arkansas Children's Hospital and Research Institute

The Biostatistics Program in the Department of Pediatrics at the University of Arkansas for Medical Sciences and the Arkansas Children's Hospital Research Institute (ACHRI) invites applications for a tenure-track faculty position in Biostatistics at the level of Assistant Professor. The Program currently provides support in the development, planning and analysis of both pre-clinical and clinical research studies in the Department of Pediatrics, the Arkansas Children's Hospital, and the ACH Research Institute.

Qualified candidates must have a doctorate in biostatistics or statistics completed by May of 2013. The successful candidate must show evidence of collaborative research and peer-reviewed publications, outstanding communication skills, a professional orientation toward service, strong ability and interest in teaching, and a strong methodological orientation. Faculty appointment will be at the University of Arkansas for Medical Sciences Department of Pediatrics.

Interested applicants should submit a cover letter of application with a description of previous collaborative experience and a brief description of their current statistical methods research, as well as updated curriculum vitae at our website: <https://base.uams.edu/redcap/surveys/?s=68wJFh>

The UAMS Department of Pediatrics is the largest department in the UAMS College of Medicine with over 230 faculty members and more than 100 residents and fellows. Arkansas Children's Hospital is among the ten largest children's hospitals in the United States and was ranked among the nation's best places to work by FORTUNE for the past three years. Located in the foothills of the Ozark Mountains, Little Rock is an exceptionally family-oriented community combining Southern civility and friendliness, affordable housing, quality school options, a mild climate, excellent cultural and artistic venues, professional minor league sports, world class hunting, fishing and other outdoor recreational opportunities in an environment of extraordinary natural beauty. With a population in excess of 500,000, Greater Little Rock offers the most desirable features of large cities without sacrificing ease of access and convenience. For more information, please see our website at <http://www.arpediatrics.org/research/biostatistics>.

We are committed to the importance of the diversity of UAMS leadership, faculty, staff and students in order to enhance the education of our students, reduce racial and ethnic health disparities in our state, and provide an environment in which all employees and views are welcomed.



THE OHIO STATE UNIVERSITY COLLEGE OF PUBLIC HEALTH Division of Biostatistics -- Associate or Assistant Professors

The Division of Biostatistics in the College of Public Health at The Ohio State University invites applications for two faculty positions to begin Autumn semester 2013. The Division and College are expanding and we have recently moved to an attractive new location at the center of the campus.

Associate/Assistant Professor: Tenure-Track

We seek outstanding individuals with a PhD in Biostatistics or Statistics and an excellent research and teaching record. All areas in Biostatistics will be considered. The successful candidate is expected to teach and carry out methodological and collaborative research, and advise PhD and masters (MS and MPH) students. Rank, salary, and tenure status will be determined by the candidate's credentials. Tenured appointment at the Associate Professor level is possible. This is a 9-month appointment. Opportunities for summer support through research projects exist.

Associate/Assistant Professor: Clinical-Track

We seek outstanding individuals with a PhD in Biostatistics or Statistics and a proven record of exceptional teaching. All areas in Biostatistics will be considered. The successful candidate is expected to teach about five semester (graduate or undergraduate) courses during the academic year and advise masters (MS, MPH) students. Opportunities for summer support through collaborative research projects and additional teaching exist. Clinical track appointments are on long-term, renewable contracts and are eligible for promotion.

The Division faculty have the opportunity to collaborate closely with researchers from one of the most comprehensive research universities in the world that includes 7 health sciences colleges and research institutes. The Division administers an interdisciplinary PhD program in Biostatistics jointly with the Department of Statistics. For further information about our division, please visit: <http://cph.osu.edu/bio/> Located in the state capital Columbus and a metropolitan area of more than 1.7 million, Ohio State offers excellent opportunities for interaction with practitioners, policymakers, and academic colleagues.

For further details about the positions please visit: <http://cph.osu.edu/about/employment> Rank, salary, and tenure status will be determined by the candidate's credentials.

Please send a letter of application, CV, and contact information for three references in the preferred electronic format to: biostatsearch@cph.osu.edu

For the tenure-track position, include a research statement, and for the clinical-track, a teaching statement. Separate applications are necessary for each position. In the subject header, please indicate: "Tenure-Track" or "Clinical-Track" as appropriate.



An EEO/AA employer. To build a diverse workforce, The Ohio State University encourages applications from individuals with disabilities, minorities, veterans, and women. In accordance with the University policies, this position requires the successful completion of a background check.

Survey Sampling Statistician

EOE

Westat is an employee-owned corporation headquartered in the suburbs of Washington, DC (Rockville, Maryland). We provide statistical consulting and survey research to the agencies of the U.S. Government and to a broad range of business and institutional clients. With a strong technical and managerial staff and a long record of quality research, Westat has become one of the leading survey research and statistical consulting organizations in the United States.

Our company was founded in 1961 by three statisticians. The current staff of more than 2,000 includes over 60 statisticians, as well as research, technical, and administrative staff. In addition, our professional staff is supported by data collection and processing personnel situated locally and in field sites around the country. The work atmosphere is open, progressive, and highly conducive to professional growth.

Our statistical efforts continue to expand in areas such as the environment, energy, health, education, and human resources. Westat statisticians are actively involved in teaching graduate-level courses in statistical methods and survey methodology in collaborative arrangements with area colleges and universities.

We are currently recruiting for the following statistical position:

Survey Sampling Statistician

Job Code 5307BR

Responsibilities include: developing sample designs (determining stratification and allocation to strata; determine sample size based on differences and power; determine optimal clustering; and select sample); selecting and/or constructing appropriate sample frame; developing and documenting weighting plan which includes non-response adjustment and bench-marking; developing and conducting imputation for item nonresponse and estimating sampling errors using appropriate software; writing specifications for programmers; and preparing reports on sample design, weighting procedures and other methodological issues. Candidates would benefit from knowing SAS and other statistical software packages; although candidates are not required to do programming. A master's or doctoral degree in statistics is required with 3 or more years of relevant experience. Coursework in sample survey design is highly desirable.

Westat offers excellent growth opportunities and an outstanding benefits package including life and health insurance, an Employee Stock Ownership Plan (ESOP), a 401(k) plan, flexible spending accounts, professional development, and tuition assistance. To apply, go to www.westat.com/jobs and enter **5307BR** in the space provided.



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Research Corporation*

Virginia

■ The department of statistics at Virginia Tech anticipates a tenure-track position in computational statistics with emphasis on data mining, data visualization, spatial statistics, machine learning, neuroscience, or related areas, starting fall 2013. Appointments at assistant professor level are preferred, but exceptional senior candidates will be considered. Applications must be submitted online at www.jobs.vt.edu (posting #0122330). Further details available at www.stat.vt.edu. Review of applications begins 12/01/2012. Virginia Tech is an EO/AA university with a strong commitment to the principle of diversity.

Wisconsin

■ Tenure-track position in actuarial science. The Wisconsin School of Business seeks a research scholar at the assistant, associate, or full professor level in the field of actuarial science. Qualified candidates are required to hold a PhD in a field related to actuarial science and to demonstrate high-quality research potential and excellence in teaching. See the web site www.bus.wisc.edu/asrmi for details. EOE.

NC STATE UNIVERSITY

One Year Master of Statistics Program

Department of Statistics, North Carolina State University

The Department of Statistics at North Carolina State University announces a new *One Year Master of Statistics Program*, beginning May 2013. This new program may be especially useful for students currently working in industry who wish to limit their absence from the workforce to twelve months (May-May).

Course schedule:

- Summer (May-July): Math Stat I, Stat Methods, Stat Computing
- Fall (Aug-Dec): Math Stat II, Linear Models, two electives
- Spring (Jan-May): Stat Consulting, four electives

Master of Statistics students can also choose an optional concentration to add focus to their degree program: *Biomedical Statistics, Environmental Statistics, Mathematical Statistics, Statistical Genetics, and Financial Statistics.*

All application materials should be submitted on-line for 'Summer 1' admission by **January 15**, through the web site:

<http://www.stat.ncsu.edu/programs/grad/application/>

For details, see <http://www.stat.ncsu.edu/programs/grad/masters/>, or contact the Co-Directors of Graduate programs: (Email) dgp@stat.ncsu.edu or phone (919) 515-1950 (Sujit Ghosh) and (919) 515-1917 (John Monahan)

■ The University of Wisconsin-Platteville Mathematics Department has an opening for a tenure-track position for a statistician beginning either January or August 2013. A doctorate in statistics must be completed with a transcript provided by January 1, 2014. Preference will be given to an applicant interested in the actuarial field. To apply, visit the website: www.uwplatt.edu/pers/employ/Fac-Statistics.htm. Review of applications will begin on October 1, 2012. EOE.

Wyoming

■ Tenure-track assistant professor, statistics, beginning August 2013. Requirements include PhD in statistics or related field and excellence in both research and teaching at all levels. Seeking candidate with expertise in computational statistics. Valuable complementary interests include Bayesian statistics and interdisciplinary research. Collaborative opportunities exist both on campus and with NCAR. Full description and application instructions are at www.ezfacultysearch.com/uwyo/stats/10. The University of Wyoming is committed to diversity and endorses principles of affirmative action. We acknowledge that diversity enriches and sustains our scholarship and promotes equal access to our

Academia Sinica Institute of Statistical Science Regular Research Positions

The Institute of Statistical Science, Academia Sinica, is seeking outstanding candidates for regular research positions at the level of assistant, associate or full research fellow available in 2013. Candidates in all areas of Statistics will be considered. Candidates should have a PhD in statistics or related fields. Application materials must include (1) a curriculum vitae, (2) three letters of recommendation and (3) representative publications and/or technical reports. Additional supporting materials such as transcripts for new PhD applicants may also be included. Except for the letters of recommendation, electronic submissions are encouraged. Applications should be submitted to

Dr. Su-Yun Huang
Chair of the Search Committee
Institute of Statistical Science, Academia Sinica
128 Sec. 2 Academia Road, Taipei 11529,
Taiwan, R.O.C.
Fax: +886-2-27831523
E-mail: syhuang@stat.sinica.edu.tw

Applications should be completed by
December 31, 2012 for full consideration.

Open-rank tenure-track faculty positions Department of Biostatistics and Computational Biology University of Rochester

The Department of Biostatistics and Computational Biology (DBCB) at the University of Rochester is seeking highly qualified applicants for several open rank tenure-track faculty positions. Academic rank will be commensurate with credentials. The Department has a strong preference for attracting applicants with dual interests in the development of statistical methodology (theory and/or computation) and collaborative scientific research, including clinical trials (especially design and analysis of early phase and adaptive trials); Big Data (especially high-throughput -omics and imaging data) and closely related areas (e.g., biomedical informatics) and health services (e.g., comparative effectiveness and outcomes research). Especially encouraged to apply are faculty with a strong interest in developing new initiatives that reflect the priorities for this search.

The Department has 29 faculty members with strengths in several methodological research areas. We offer graduate degree programs leading to a Ph.D. and M.A. in Statistics as well as a M.S. in Medical Statistics. We maintain an active postdoctoral program supported by research and training grants and very strong collaborative relationships with many other departments, centers and units throughout the University of Rochester Medical Center (e.g., Neurology, Public Health Sciences, Environmental Medicine, Cardiology, Biomedical Genetics, Psychiatry, Orthopedics, Cancer Center, and the Clinical and Translational Sciences Institute).

The University of Rochester is one of the nation's leading private research universities; its Medical Center is consistently ranked as one of the nation's leading academic medical centers. Rochester is home to several other private institutions of higher learning and continues to be world-renowned as a center of activity for imaging and optics. In 2010 *Forbes* magazine rated Rochester as the 3rd best place to raise a family and in 2012, *Kiplinger's Personal Finance* magazine rated Rochester as the 5th best city for families, citing low cost of living, top public schools, and a low unemployment rate. Included among the many amenities available to its residents are a vibrant music and arts community, a wide variety of excellent restaurants, eight professional sports teams, and numerous outdoor recreational activities.

Position Qualifications: Doctoral degree in biostatistics, statistics or strongly related discipline. Candidates must have excellent oral and written communication skills. Candidates for Associate and Full Professor positions should also have an established track record of peer-reviewed publications, demonstrated success in attracting extramural research funding, and evidence of teaching excellence at the graduate level. The University of Rochester is an affirmative action/equal opportunity employer. Women and minority candidates are strongly encouraged to apply.

Application procedure: All applicants should send a cover letter, a detailed statement of research and teaching interests, and an up-to-date, complete curriculum vitae. Applications for Assistant and Associate Professor should include at most three representative publications and must additionally arrange for three letters of reference to be sent directly to the email or mailing address below. Applications for Full Professor should include the name and contact information of four references that have agreed in advance to provide a reference letter. With the exception of reference letters, all application materials should be emailed in a single PDF file to: FacultySearch@bst.rochester.edu.

Reference letters may be emailed to FacultySearch@bst.rochester.edu or sent by surface mail to:

Search Committee Chair
c/o Malora Zavaglia
Department of Biostatistics and Computational Biology
University of Rochester Medical Center
601 Elmwood Avenue, Box 630
Rochester NY 14642

Review of applications will begin on November 1, 2012 and continue until positions are filled.



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The ASA announces the Conference on Statistical Practice Innovations and Best Practices for the Applied Statistician

February 21-23, 2013, New Orleans, LA

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educational mission. We seek and welcome applications from individuals of all backgrounds, experiences, and perspectives.

International

■ The Skolkovo Institute of Science and Technology (Skolkovo Tech) seeks candidates for tenured and tenure-track faculty positions in science, technology, and innovation to begin fall 2013 or thereafter. Skolkovo Tech is an innovative, new, private university located just outside of Moscow, Russia. Please visit <http://web.mit.edu/sktech/faculty-positions> for more information and submit application materials to <https://sktech-search.mit.edu> by December 15, 2012. EOE.

■ Nontenure-track teaching position for business statistics in the Dept. of ISOM. Applications will be accepted until the position is filled. Excellence in teaching, and PhD required by employment start-date. The successful applicant is expected to play an important role in teaching and developing business statistics courses for undergraduate and MBA programs of the Business School. Submit CV and three referees to: stat11@ust.hk.jobs.amstat.org/briefjobdetail.cfm?job_id=4919057. EOE. ■

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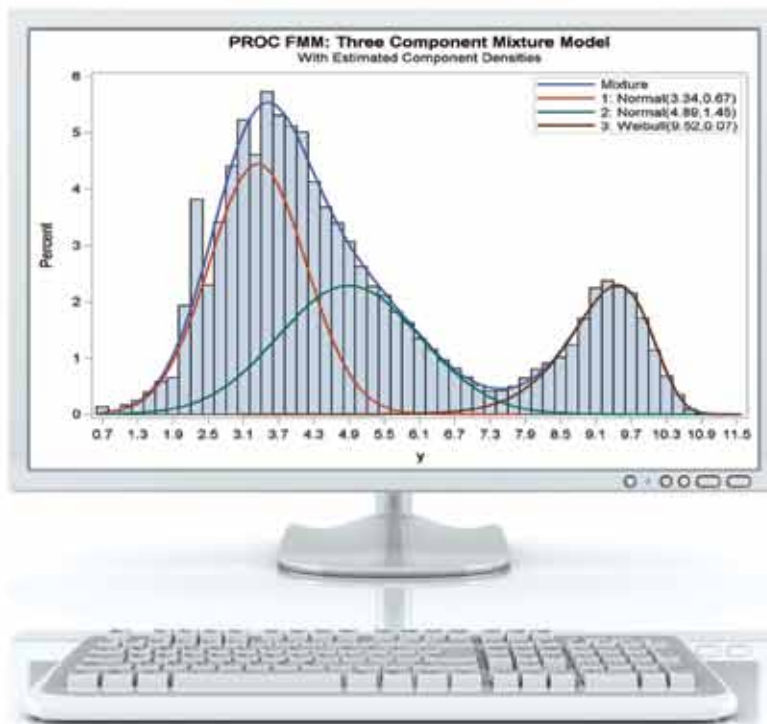
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