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# AMSTATNEWS

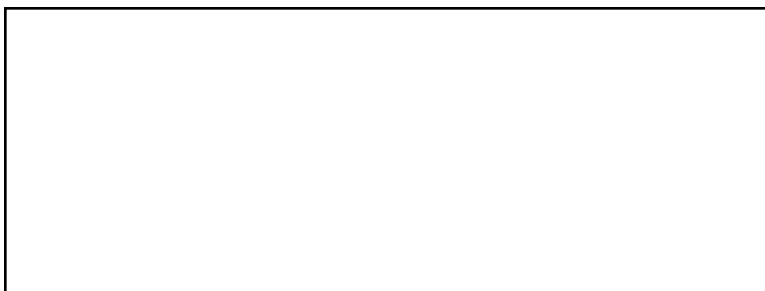
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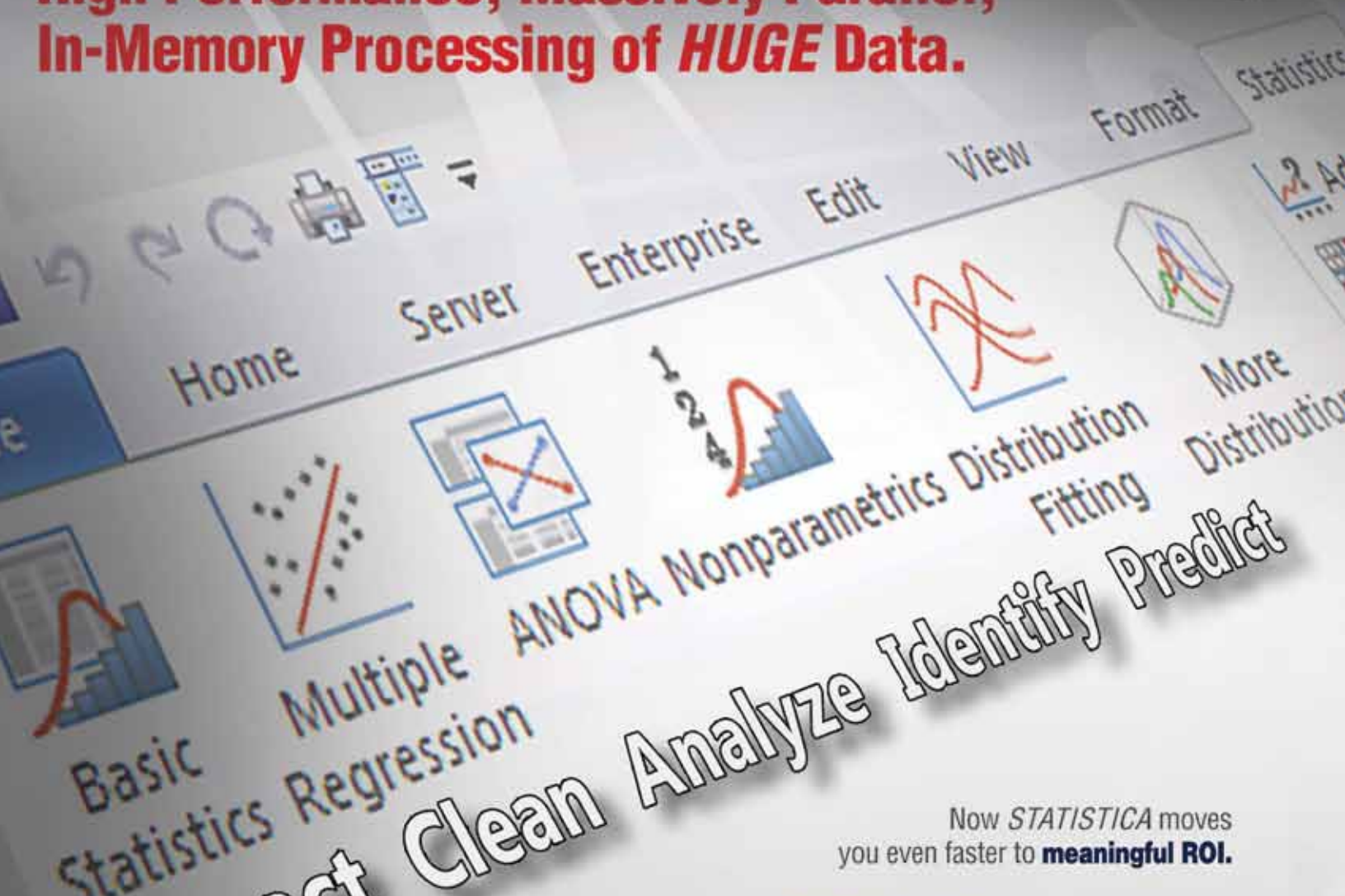
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The American Statistical Association is the world's largest community of statisticians. The ASA supports excellence in the development, application, and dissemination of statistical science through meetings, publications, membership services, education, 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.

## features

- 3 President's Corner
- 5 Meet Clyde F. Martin: A Man on a Mission
- 6 Contributors Sought for *Significance*
- 7 Four Students Talk Fellowships
- 11 New England Symposium on Statistics in Sports Bridges Gaps
- 12 Salary Survey of Business, Industry, and Government Statisticians
- 16 *Technometrics Highlights*  
Special *Technometrics* Issue: Conference on Data Analysis
- 17 Call for Editor Nominations
- 18 Conference on Statistical Practice Mentoring Program to Help Promote Statistics
- 20 Conference on Statistical Practice Registration Form

## columns

- 23 **SCIENCE POLICY**  
**Influencing Federal Research Funding Policy—White Papers?**

This column is written to inform ASA members about what the ASA is doing to promote the inclusion of statistics in policymaking and the funding of statistics research. To suggest science policy topics for the ASA to address, contact ASA Director of Science Policy Steve Pierson at [pierson@amstat.org](mailto:pierson@amstat.org).



Pierson

Contributing Editor

*Steve Pierson earned his PhD in physics from the University of Minnesota. He spent eight years in the physics department of Worcester Polytechnic Institute before becoming head of government relations at the American Physical Society.*

- 25 **STATtr@k**  
**Communicating with Clients**

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](mailto:megan@amstat.org).



Starbuck

Contributing Editor

*Robert Starbuck retired in 2008 after 32 years in the pharmaceutical industry. He is an active member of the American Statistical Association, an ASA Fellow, and a recipient of the ASA Founders Award. He earned his bachelor's in mathematics from Miami University and a master's and PhD in statistics from North Carolina State University.*

## Online Articles

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

The San Antonio Chapter of the ASA is accepting nominations for the **Don Owen award** until February 7, 2014. For details, visit <http://magazine.amstat.org/blog/2013/10/23/donowennominations>.

Do you want to effectively convey your clinical development program's safety information in a visual and intuitive manner? Visit [www.ctspedia.org/StatGraphHome](http://www.ctspedia.org/StatGraphHome) to learn powerful graphical approaches for visualizing laboratory and liver toxicity, general adverse events, and ECG and vital signs. You also can learn more about how to maximize your ability to effectively convey the data's key messages. Read more about this in the article **Visualize and Understand Your Safety Data: A Library of Graphical Approaches** at <http://magazine.amstat.org>.

Why are introductory short courses in statistics so bad, and how can they be improved upon? Murray Aitkin addresses this question in his Statistician's View article, **"What Should Be in the Introductory (Short) Course in Statistics for Non-Mathematicians?"** Read the article at <http://magazine.amstat.org/blog/2013/11/01/nonmathshortcourse>.

Daniel Smith debunks the six common misconceptions about Six Sigma in his Statistician's View article **"Mathematical Myopia: Debunking Common Six Sigma Misconceptions."** To read the article visit <http://magazine.amstat.org/blog/2013/11/01/mathmyopia>.

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/datetime](http://www.amstat.org/datetime).



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## columns

27 175

### ASA Sections: Past, Present, and Future

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



Beyler

#### Contributing Editors

*Nick Beyler is a statistician at Mathematica Policy Research and secretary for the ASA Council of Sections Governing Board. He graduated with a PhD in statistics from Iowa State University in 2010.*



Czajka

*John Czajka is a senior fellow at Mathematica Policy Research, his employer since 1978. He is chair-elect of the Council of Sections, immediate past chair of the Survey Research Methods Section, a past chair of the Government Statistics Section, and a past president of the Washington Statistical Society.*



Halvorsen

*Katherine Halvorsen has taught statistics at Smith College since 1989 and directs the program in applied statistics there. She chairs the Council of Sections and has served as the ASA's Meeting Within a Meeting program chair, chair of the Advisory Committee on Continuing Education, and secretary-treasurer of the executive committee for the Section on Statistical Education.*



King

*Eileen King is associate professor in the division of biostatistics and epidemiology at Cincinnati Children's Hospital Medical Center. Prior to joining CCHMC, she was head of the department of biometrics and statistical sciences at The Procter & Gamble Company. She is past-chair of the Council of Sections Governing Board.*



McKenzie

*John McKenzie is a professor emeritus of statistics at Babson College. He is a Fellow and Founders Award winner of the American Statistical Association. He earned an AB from Amherst College and two master's degrees and a PhD in statistics from the University of Michigan.*

28

### MASTER'S NOTEBOOK

#### Developing Successful Career Relationships: Leveraging Mentoring, Coaching, and Sponsorship

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



Kalicin

#### Contributing Editor

*Sarah Kalicin is a senior statistician at Intel Corporation. Mentoring, coaching, and sponsorship skills have been crucial for her to develop to reach her career goals. Kalicin holds a master's in applied statistics from the University of Michigan and a bachelor's in mathematics and psychology from SUNY Oswego.*

## departments

30

### education

Webinar Series Planned to Help Update Guidelines for Undergraduate Statistics Programs

Second Biennial Electronic Conference on Teaching Statistics

Professional Development Opportunities at JMM 2014

## member news

32

People News

33

Awards and Deadlines

35

Section • Chapter • Committee News

37

Professional Opportunities

# MOOCs and Statistics Education: FAD or OPPORTUNITY?

In 1983, as a graduate student at The University of North Carolina at Chapel Hill, I was handed the book *Statistics*—by David Freedman, Robert Pisani, and Roger Purves—and told I would have sole responsibility for teaching a section of STAT 11, the undergraduate introductory course for non-majors. I was to develop lectures for an audience of mostly non-quantitative students for whom the course was an unwelcome requirement. The technology at my disposal would be chalk and a blackboard (they were all black back then). At most, I would reach about 40 students (if they came to class).

In the 30 years since, things have changed dramatically. Tools and platforms for creating and disseminating lecture materials, assignments, and outside resources and advances in classroom technology have transformed how we communicate with students and relegated those black (and white) boards to auxiliary status. Data analysis and visualization software has spearheaded a revolution in how we introduce concepts. Interest in learning statistics has skyrocketed, even among students like those I taught in Chapel Hill.

And the Internet has facilitated reaching students who are not physically present in the classroom.

Although distance education courses have become commonplace over the past few decades, widespread interest in online learning among not only the higher education community, but the general public on a much broader scale, is more recent. Many institutions are launching entire online degree programs; several master's programs in statistics are already under way.

Perhaps the most radical development has been the massive open online course (<http://bit.ly/1fgwteA>), or MOOC. A MOOC is meant to reach an enormous audience of students worldwide, including those for whom traditional learning opportunities are infeasible, and provide open access to course content and platforms for interacting with fellow students. Articles about MOOCs abound in the popular media; *The New York Times* even named 2012 “the year of the MOOC” (<http://nyti.ms/1e6G8kZ>).

Several providers of MOOCs, both for- and not-for-profit, have emerged—including Coursera

([www.coursera.org](http://www.coursera.org)), Udacity ([www.udacity.com](http://www.udacity.com)), and edX ([www.edx.org](http://www.edx.org))—and involve partnerships with consortia of major institutions whose faculty deliver the courses. The business model for MOOCs—including financial sustainability, issuing of credit, and so forth—is still evolving, and there is both excitement and skepticism (<http://bit.ly/15kTEP3>) over whether MOOCs will revolutionize higher education.

What do MOOCs mean for statistics education? Many of the first MOOCs on introductory statistics were taught by computer scientists, psychologists, and others. However, several statisticians have since entered the MOOC arena and have a first-hand perspective on the implications for our discipline.

I asked Brian Caffo, Jeff Leek, and Roger Peng of the department of biostatistics at Johns Hopkins to share their experiences. All three are teaching MOOCs through the Hopkins collaboration ([www.coursera.org/jhu](http://www.coursera.org/jhu)) with Coursera. Jeff teaches Data Analysis ([www.coursera.org/course/dataanalysis](http://www.coursera.org/course/dataanalysis)) and Roger teaches Computing for Data Analysis ([www.coursera.org/course/compdata](http://www.coursera.org/course/compdata)), both of which are applied courses, and Brian teaches the more technical Mathematical Biostatistics Boot Camp 1 and 2 ([www.coursera.org/course/biostats2](http://www.coursera.org/course/biostats2)). All are based on in-classroom courses they teach to first-year graduate students, with lectures delivered on video.

They admit that this happened a bit by accident. Jeff and Brian had been discussing incorporating blended learning ([http://en.wikipedia.org/wiki/Blended\\_learning](http://en.wikipedia.org/wiki/Blended_learning)) into their courses, in which some content would be delivered via video, and looked into campus resources for implementing this approach. Simultaneously, the university was finalizing the agreement with Coursera, and, given they were already videoing lectures, they were asked to direct their efforts toward developing MOOCs. They recruited Roger to join them, and all had mere months to prepare their first MOOC offerings.

The courses Roger and Jeff teach attract breathtaking numbers of students. Jeff's last offering of Data Analysis enrolled more than 100,000 and is #9 in cumulative enrollment among all Coursera offerings. Five days before the most recent offering of Computing for Data Analysis began, Roger had more than 68,000. Both remarked on



Marie Davidian

the “stunning,” “maximal” variation in student backgrounds, from complete novices to experts. Roger’s course introduces R for data analysis, and students range from the completely R-naïve to computer scientists. Brian’s courses require calculus; nonetheless, his Boot Camp 1 attracted 16,000, 20,000, and 25,000 students the first three times it was offered and the current Boot Camp 2 has 9,000 enrolled. Some are mathematics professors who teach statistics; others are computer scientists, engineers, and physicists.

Not all enrollees complete the courses. Jeff reports that about 5%–10% of Data Analysis students earn a statement of completion, while another 30%–40% actively participate. That sounds low until one considers that 5% of the course enrollment is 5,000.

Managing this many students is daunting, and all discourage communication by email. They praise the course-dedicated online message boards, on which they spend 1/2 to 1 hour per day answering questions. The boards facilitate interaction among students. Often, a question is answered by scores of fellow students, many from the other side of the globe, while the instructor sleeps! International study groups form, and all express amazement at the extent to which students who have never met help each other learn. They see the size and diversity of the learning community, which in a seeming contradiction can be more personal than that of a traditional class because of this mechanism for discussion and sharing, as a real value for students.

The biggest challenge? Developing meaningful assessments when individual grading is not feasible. Multiple choice is easiest to implement, but devising questions that reflect knowledge gained is not. Roger uses special tools to automate evaluation of the quality of student programming. Jeff’s course involves numerous data analysis projects. He uses a “peer-grading” system, whereby each student’s work is randomly assigned to four others, who evaluate it using a rubric Jeff has developed. This leads to valuable discussions among students about what constitutes a “good” data analysis, further enhancing learning.

All cite the opportunity to reach a vast audience and the efficiency with which statistical content can be widely disseminated, particularly to those who otherwise would not have access, as immensely satisfying. And approaches learned in a MOOC are brought back to the classroom, improving traditional instruction.

What about the future? All see an enormous potential for enhancing global statistical literacy. A MOOC for the lay public, a “Citizen’s Guide to Statistics,” could draw hundreds of thousands of students. However, they see doing this right as a challenge that would likely require a team effort,

major time commitment, and significant dedicated institutional resources.

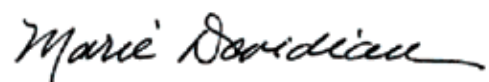
Roger notes that a model for support of MOOCs has still not been developed—at Hopkins or elsewhere. So far, taking advantage of willing faculty like he and his colleagues has worked, but it is not sustainable. However, the benefits are worth determining how. Jeff sees the competition MOOCs can create among universities to offer the highest quality instruction as a positive force for encouraging all institutions to take teaching in all settings more seriously. As Brian points out, competing internationally to deliver quality instruction will inspire innovation and motivate instructors to continually update and refresh their courses.

On the flip side, concerns that a few stellar instructors will dominate teaching of a subject and have undue influence already have surfaced. As institutions seek to integrate provider-offered MOOCs into existing curricula, faculty have decried the resulting diminished in-person instructor-student engagement, as in the recent case (<http://bit.ly/1hA8h3N>) of philosophy professors at San Jose State refusing to use a famous MOOC developed by a Harvard professor for edX.

All acknowledge that the future is unknown. How MOOCs will affect degree programs remains to be seen. Roger notes that the MOOCs he, Jeff, Brian, and others offer seem to attract many students who would likely not enter a degree program at Hopkins, regardless, so may be filling a niche that will not result in increased degree enrollments. But Brian notes that their MOOC involvement has brought extensive exposure to the Hopkins Department of Biostatistics—for many people the world over, Hopkins biostatistics *is* statistics.

But is our profession sufficiently engaged? Roger, Brian, and Jeff are concerned that we are not, that we are failing to “future proof” ourselves against the threat of other fields co-opting the rich opportunities to disseminate statistical principles to diverse, vast audiences. They would love to see talented, innovative members of our profession become involved.

No one knows what the “mature” version of the MOOC revolution will look like. But Jeff, Roger, and Brian emphasize that they do not see MOOCs as a passing fad, and they are convinced by their experience that the demand for online statistics courses is enormous. In fact, all concur this demand may even extend to advanced courses. They see meeting the demand at all levels as a positive development for our field that will not take over or replace other forms of statistics instruction, but only serve to enhance and expand knowledge of our discipline across the globe.



# Meet Clyde F. Martin: A Man on a Mission

Amy Munice

Clyde F. Martin (ASA Fellow and elected member of ISI, among many other credits) is a man on a mission.

He'll need many cellphones to succeed in his quest ...

More importantly, he'll need an army of like-minded statistics PhDs to live and work in Africa, helping to turn raw data into information that will help transform crop insurance into a truly workable program capable of staving off famine in Sub-Saharan Africa. The landscape there is not much different from Lubbock, where Texas Tech University is and where Martin has taught for more than 30 years. Farmers in West Texas, however, grow cotton and have a deep bench of agricultural scientific insights at their disposal to succeed. Not so in Africa, a fact that Martin has become acutely aware of during his tenure this past year as one of the State Department's Jefferson Science Fellows.

Little more than a year ago, Martin gave Africa's challenges in developing a functional crop insurance program not much more than passing thought. That was before he applied and won the Jefferson Fellow Award to work with the U.S. State Department and get the break from decades in academia he sought. Martin recommends the Jefferson Fellowship program to others, and if his experience is an indicator, expect your life to change.

Martin recounts his experiences and current focus, saying, "I'd advise anyone thinking of applying to be a Jefferson Fellow to not expect that you are going to be doing math or statistics all

the time. Because you are trained in statistics, you are trained to think, and, more importantly, statisticians are trained to interact with other disciplines. At the State Department, I interacted with diplomats. Your job as a Jefferson Science Fellow is not to answer questions as much as point out that there is a need for data and a scientific approach to understanding problems. For example, there is now a plant disease called Coffee Rust in Costa Rica, and as statisticians and statisticians, we point out that we need to have data on weather, temperature, [and] precipitation [that] are changing and creating conditions for the dominance by this pathogen. I now have a student at Texas Tech looking into this problem ...

"... The organization I've been working with this past year is Feed the Future. It involves 17 countries, with the majority in Africa. There is not one thing that needs to be done to make sure that people don't die of hunger, but rather many things that need attention. ... My key focus has been on taking a look at the limitations of indexed insurance in the African context and how to modify it to make it more acceptable to small holders there.

"The problem is that indexed insurance has been based on rainfall (i.e., if rainfall is less than X millimeters, then everyone who has insurance is paid, and if it is more than Y, then nobody is paid), with graduated payments correlated to rainfall. One of the reasons that doesn't work is that there are many reasons why farmers might lose their crops other than the weather. Plant diseases, locusts, and other insects are just some examples where a weather index doesn't cover the loss.



Clyde Martin stands in a field in what looks like Africa, but is really Lubbock, Texas.

"What I'm hoping is that we can expand the coverage to cover all the catastrophic losses. Logistically, it is impossible to do verification of every single claim. These are small farms, and the total amount of insurance might be \$700. You can't afford to send an insurance agent out to inspect every field, so there has to be some other mechanism to measure catastrophic losses and to get the money to the farmers at the time when the harvest would usually take place. If we can't solve this problem, nobody will want to buy the insurance ..."

Martin continues, "There is widespread agreement that a program is needed. One of the major obstacles is that we don't have good data on what is happening in those rural areas throughout Africa. There are cellphone networks that are now being used



Martin, flanked by his PhD students. From left: Nothabo Dube, Zimbabwe; Clyde Martin; Masaki Ogura, Japan; Kendal Gillies, United States; and Yulei Pang, China

to deliver information to farmers about prices and market matters related to disease prevention. We could potentially also collect data via cell phones, but this data will be messy and not very accurate. With proper statistics, however, we could make realistic estimates of crops and deliver insurance before the crop is due. Insurance depends on information—if your information is good, you have potential for good insurance. . . . Voids in information

cause premiums to be higher than they otherwise would be, and this works against the viability of an insurance program.”

Martin is juggling many routes and options for making these African crop insurance programs work. One possibility he is considering is the equivalent of a Fulbright Program to bring African students to the United States for studies in agricultural statistics with the requirement that they go back to Africa to write their dissertations.

Martin comments, “The World Bank had one very successful program using cell phones for data collection, and we are looking at how to use their experience in the design of a solution to the crop insurance problem. What we had hoped to do was get a pilot project in the next few years and verify that it can be done. . . . Actually, we know it *can* be done, but we just need to know more about the hoops you need to jump through to get data properly analyzed. . . . For example, it’s estimated that 90% of rural people in Africa have cellphone access, but very few have smart phones, and if we had those with apps, it would make data collection far easier.”

Talking to Martin, you get the strong sense that he will get this job done one way or another. Although Martin is quick to say he’ll work on this until “someone better comes along, and they always do,” you only have to glance at his lengthy CV to see that making progress on difficult problems has long been his calling card. For example, he co-authored a paper about Kawasaki Disease that showed low dose aspirin treatment was just as successful as high dose, but with fewer complications. He also led a study of the 1987 measles epidemic at Texas Tech University showing that the epidemic was stopped when the immunity rate exceeded 98%. He has helped pen more than 400 refereed books, reports, and papers on diverse topics ranging from helicopter autopilot design, to irrigation techniques for cooling potatoes, to a current book on geometric tools for statisticians.

It’s likely that Martin’s many other projects will need to be put on the back burner for a bit. Martin says, “I went from zero to all-consuming” when it comes to wielding statistics to fight famine.

Martin is a man to watch. ■

## Contributors Sought for *Significance*

Oz Flanagan, Royal Statistical Society Web Editor

*Significance* magazine recently celebrated its 10th birthday, and its sister website, [www.significancemagazine.org](http://www.significancemagazine.org), just reached its third birthday. It’s been a hugely successful period for the publication due to the statisticians who have contributed to the magazine throughout the years.

The aim is to make statistics accessible to the ordinary reader. The trick with this is to create an interesting narrative in which authors can convey the important message that the data tell them. Statisticians have so many fascinating stories to tell from their work examining and making sense of numbers.

This is precisely the reason the American Statistical Association and Royal Statistical Society created *Significance*. It gives statisticians on both sides of the Atlantic the platform on which to transmit their findings and thoughts to the wider world.

If you have an idea for an article or a suggestion, please contact the *Significance* editor. For lengthy and detailed articles in the print magazine, you can get in touch with Julian Champkin at [j.champkin@rss.org.uk](mailto:j.champkin@rss.org.uk). For shorter and more topical articles on the website, get in touch with Oz Flanagan at [o.flanagan@rss.org.uk](mailto:o.flanagan@rss.org.uk).





# Four Students Talk Fellowships

This past summer, 36 undergraduate and graduate students spent three months at The University of Chicago as the first fellows of the Eric and Wendy Schmidt Data Science for Social Good program (<http://dssg.io>), which allows aspiring data scientists to work on data mining, machine learning, Big Data, and data science projects with social impact. All the fellows used their coding and analytics skills to take on real-world problems in education, health, energy, and transportation for government and nonprofit sponsors. Four of the fellows offer advice and respond to questions about their experiences, views on data science, and future plans.



**Varoon Bashyakarla** earned his bachelor's degree from Yale, where he studied statistics and economics, spearheaded cancer fundraising and awareness efforts, and played on the men's club tennis team. He hopes to pursue a career as both a scholar and activist.

## How are you spending your summer as a DSSG fellow?

I'm working on a project to optimize some of the Chicago Police Department's predictive algorithms. My teammates and I are mining vast troves of data to detect salient features that may possess crime-predictive capacity, and we are constructing spatiotemporal point process tests to investigate the strength of the associations we find.

## What inspired you to apply?

I applied for this fellowship because I am—and always have been—a people person; because the social problems and inequity I've witnessed appeal to me on an emotional, human level; and because I believe very much in the truth of mathematically grounded inquiry. In fact, I began studying statistics because I wanted to understand the dynamics of social problems more rigorously. Statistics provided me with the ability to test the validity of my own preconceived notions about the way our world operates and equipped me with the tools to evaluate, for instance, whether assumptions imposed on models used in international development research were realistic and reasonable. Hence, DSSG enabled me to merge my two interests—one in addressing social problems and the other in data-driven analysis and decisionmaking.

On the first day of the fellowship, we were asked to submit short statements about our goals for the summer. I wrote, "I hope to learn firsthand whether or not studying social problems from a data science

lens is one I enjoy, value, and can justify pursuing in the future given other modes of approaching these challenges and my own strengths, weaknesses, talents, and interests." I realize that's a tall task for 12 weeks, but my fellowship experience thus far has certainly been informative to this end.

## Do you recommend fellow statisticians participate in this program in the future? If so, why and what advice do you have for them?

Yes, I wholeheartedly recommend fellow statisticians participate in this fellowship and, more generally, would love to see more statisticians applying their skills to social problems. In both cases, doing so affords the opportunity to help people and organizations striving to do good, honest work in a manner that feels more direct than much traditional, academic research does. The problems we study and solutions we construct have clear, human motivations and implications. One crucial step in this process is investing the time and energy to formulate an interesting, feasible question, and the importance of this step can't be overestimated.

## The DSSG fellows come from diverse fields. How do you view the relationship of statistics to data science?

This question has no clear answer. My own personal take is that statistics is the cornerstone of data science, but that data science is a much larger field. Data science clearly includes parts of applied statistics, computer science, data mining, machine learning, and other, more practical considerations such as data storage and retrieval. Dealing with the intractability of analyzing 1 TB of data, for example, demands database knowledge from computer science, data analysis tools from statistics, and disciplinary expertise about the phenomenon under study, too. In this vein, I think data science encompasses an idea of storytelling through data—what's the problem, why do we care, how can data inform this question, and what do the data say? Statistics is clearly central to all of these components.

### What advice do you have for young statisticians wanting to work in data science?

Ask a question you're interested in, find (or collect) data to answer it, and get your hands dirty! There's no better way to learn data science than to do it yourself. There's data about everything under the sun nowadays, so you can ask virtually any question you wish. That said, don't limit yourself to trying to answer your questions through number crunching alone, particularly if you're exploring social problems. Read books and watch movies related to whatever it is you're studying. Writers and filmmakers also pose questions and explore them; allow their ideas and stories to inform your own process.

### What do you plan to do after you earn your degree?

I'll be working at Dropbox in San Francisco immediately after the fellowship concludes. My future plans are not at all set in stone, but at the moment, I'm juggling a few possibilities in my head: studying machine learning in graduate school, pursuing statistical evolutionary biology and advocating on behalf of conservation efforts, or exploring my interest in the humanities and studying philosophy. I'm also very interested in health, nutrition, and fitness, and I think the data science revolution may offer some exciting insights in these fields.



**Jonathan Auerbach** is a statistician/policy wonk hybrid who is finishing his master's in statistics at Columbia University. During the day, he is an analyst at the finance division of New York City's legislative body, the New York City Council.

### How are you spending your summer as a DSSG fellow?

My group is working with the City of Chicago's Department of Streets and Sanitation to improve their garbage and recycling collection program. We are using the department's records to evaluate the mayor's recent centralization of management and identify key metrics to assess productivity.

Most collection in Chicago takes place in alleys, but for a variety of reasons, important variables such as population density or volume of trash are unobservable at this level. A significant portion of our analysis has been developing statistical models to impute these variables.

Incorporating the department's institutional knowledge into our analysis has been an ongoing challenge. It involves navigating Chicago's bureaucracy and understanding various political interests to produce results the department can use.

### What inspired you to apply?

I began working in public policy three years ago because I was fascinated by how local governments use data and statistics to make decisions. I applied to the DSSG program to augment my data analysis skills and work with others passionate about helping governments make better data-driven decisions.

In both respects, DSSG has wildly exceeded my expectations. I have adopted new methods for manipulating data, version control, visualization, and modeling. The perspectives of the other fellows and mentors who come from a wide range of backgrounds also have been invaluable. These experiences have given me an understanding of the power and nuances of data science.

### Do you recommend fellow statisticians participate in this program in the future? If so, why and what advice do you have for them?

Now is a great time to be a policy-data enthusiast, because local governments and nonprofits are just beginning to embrace the wide applications of data analysis. For statisticians who share this passion, DSSG can be an invaluable way to gain direction and meet industry leaders.

Prospective fellows need to understand that data science is still very much the Wild West. Government and nonprofit institutions are not organized in ways that facilitate analysis. They consist of large bureaucracies, where transactional data and records are strewn across various departments in a variety of formats.

Helping governments and nonprofits understand their data requires a lot of patience and imagination. Your consolation, however, is that you will leave the world in a far better place than where you found it.

### The DSSG fellows come from diverse fields. How do you view the relationship of statistics to data science?

Statistics is a beautiful discipline studied as much for its aesthetics as its application. In contrast, data science is results driven, and statisticians are desired mostly for their practical skills. Sometimes, this can lead to a problematic relationship between statisticians and other data scientists.

Imagine that the desired result of data science (an evaluation, an imputation, a forecast, etc.) was like remodeling a building. Our clients generally have a pre-existing structure they want to improve upon,

and they know exactly what additional features they would find most useful.

The role of the statistician is to determine—given the existing structure (institutional knowledge) and the building materials available (data)—which alterations the building can safely hold. If the work is not done responsibly, the entire building could be condemned. That is, others might view the entire result as invalid, or our clients may be worse off than had they relied solely on their own analysis.

### What advice do you have for young statisticians wanting to work in data science?

The best way to become a data scientist is to jump in head first. Almost every major city has an active data science community. Find a topic you are passionate about, go online, and I guarantee you will find a whole community of data scientists working on that topic.

If you are not passionate about a topic, attend an open government meet-up. You may not be passionate about open government now, but just wait until you start paying taxes.

The best part of data science is that no one is an expert in every area, and data science communities are extremely open to teaching and helping you learn new skills. Do not be afraid to ask!

### What do you plan to do after you earn your degree?

I plan to pursue a PhD in statistics. In addition, I hope to continue working on policy issues that help local governments use data more effectively—through both my own research and collaborations with data scientists throughout the country.



**Breanna Miller** graduated from the University of Michigan in 2013 with a master's degree in statistics. While there, she assisted the university research community by providing statistical advice at the Center for Statistical Consultation and Research.

### How are you spending your summer as a DSSG fellow?

I am involved in two projects. The first is working with nonprofits that serve students to give them a better idea of which kids they are reaching and the impact they are having on those students' academic

outcomes. The second aims to help bikeshare systems in cities around the United States better balance the number of bikes at stations by predicting when stations are likely to be empty or full.

### What inspired you to apply?

The description of the program aligned with my personal and professional goals. I want to use my quantitative skills to solve complex, meaningful problems. The focus on creating solutions that our project partners can implement in the real world was also especially appealing, since the fellowship's potential for concrete impact gives meaning to the work we do this summer.

### Do you recommend fellow statisticians participate in this program in the future? If so, why and what advice do you have for them?

Absolutely! You should participate in this program if you are passionate about using data to make a difference. Future participants should learn as much as possible from the mentors and other fellows. We have diverse backgrounds, and I continue to be amazed by the breadth of knowledge of the collective group.

### The DSSG fellows come from diverse fields. How do you view the relationship of statistics to data science?

The massive amount of data that data scientists work with presents a whole new set of challenges that may require different tools than traditional statistics. I think this shift in toolkit, rather than a difference in goals, is what differentiates data science from statistics. Since we are working with more data than any of my course work has required, I am learning to use some of these tools this summer.

### What advice do you have for young statisticians wanting to work in data science?

Get comfortable using command line. In a data science context, you will likely need to work with more data than you can store locally, and this familiarity will serve you well. Also, learn to search for help. If your code isn't cooperating, there is a good chance someone else has had a similar problem, and online tutorials and forums can help you get things working.

### What do you plan to do after you earn your degree?

At the end of the summer, I plan to move to Washington, DC. I would like to continue using my skills to have a positive social impact, hopefully as an analyst in health or education policy.



**Walter Dempsey** is a PhD student at The University of Chicago, where he graduated with a BS with honors in mathematics, BS in economics, and BA in statistics in 2009. His main methodological research interests are in longitudinal and survival data analysis.

### How are you spending your summer as a DSSG fellow?

My primary focus is on a project simulating bus services for the CTA. We use GPS and passenger count data to model future demand at every stop in Chicago. These models become a transit planning tool that will allow the CTA to predict how well transit service is likely to perform under a particular schedule change before deployment of a single bus. I'm also working on providing statistical support for Divvy Bikes, a bike-sharing company in the city interested in analyzing weather and bikeshare station trends to predict how many bikes are likely to be available at each Divvy station in the future.

### What inspired you to apply?

I found the application through The University of Chicago Statistics Department's list host. Much of my work in graduate school is focused on theoretical statistics and statistical methodology and I was looking for an opportunity to apply my working knowledge to real-world data sets while becoming more familiar with the computational aspects of statistics. I also was drawn to using quantitative processes for the betterment of humanity.

### Do you recommend fellow statisticians participate in this program in the future? If so, why and what advice do you have for them?

I am happy with the program and would recommend the fellowship to any aspiring statistician. By working in teams with fellows of diverse backgrounds, one will gain understanding and appreciation for all components of data science. While statistics provides ample tools for the study and analysis of data, it is difficult for many statisticians to apply their methods in practice to large data sets, as they may lack the necessary computational background. Though not all projects are centered on Big Data, the fellowship provides a setting in which one can master the tools to apply statistical knowledge effectively.

### The DSSG fellows come from diverse fields. How do you view the relationship of statistics to data science?

Some in the data science community see statistics (and machine learning) as a set of computational tools for solving a range of optimization problems. In many cases, it is, because data scientists learn statistics through specific applications and do not interact with the statistics community directly. My hope is for a more open dialogue between the different areas within data science. It is difficult, as I think statistics is more conservative in nature than its counterparts within data science. In the end, I hope to convince these people to start viewing statistics from a more methodological standpoint.

### What advice do you have for young statisticians wanting to work in data science?

As we push toward an era of Big Data, it will be requisite for young statisticians to become more capable programmers and more knowledgeable about necessary tools to deal with the computational issues that arise in statistical procedures. This push extends beyond industry and is transforming academic departments (consider the Computational and Applied Mathematics Initiative at The University of Chicago). Statisticians who wish to pursue careers in data science must start to branch out and become more familiar with computer science—everything from data management and distributive computing to coding design and web app development. Statistics is one component in the pipeline from the data to an end product and it's important to at least understand the various pieces.

### What do you plan to do after you earn your degree?

While I have enjoyed my time at the fellowship, my current plan is to remain in the academic world and pursue a position as an assistant professor or find a postdoctoral position. I have found it is possible to contribute meaningfully to projects like those found at DSSG from an academic position; my hope is that the connection between academic departments and the data science community strengthens in the coming years so that it will be possible to work within both communities. Both groups could benefit substantially from a continuing and open dialogue, and my hope is to be part of that exchange for years to come. ■

# New England Symposium on Statistics in Sports Bridges Gaps

Scott Evans and Mark Glickman

The 2013 New England Symposium on Statistics in Sports (NESSIS) was held September 21 at the Harvard University Science Center. The symposium format was a mixture of invited talks, a poster session, and a panel discussion that drew a diverse crowd of approximately 180, including attendees from at least 30 states.

NESSIS was highlighted by two featured talks. First, Jim Albert, executive editor of the *Journal of Quantitative Analysis in Sports*, spoke about assessing streakiness in home run hitting. The second featured talk was a presentation by Richard Smith of SAMSI about completing the results of the 2013 Boston Marathon. This talk had special significance given its connection to Lingzi Lu, a master's degree student in statistics at Boston University who died in the marathon bombings.

NESSIS also featured a panel consisting of Vince Gennaro, president of SABR; Ben Baumer, former statistical analyst for baseball operations for the New York Mets; Eric M. Van, former sabermetric baseball operations consultant for the Boston Red Sox; and moderator Andy Andres, head coach and lead instructor of the MIT Science of Baseball program and Fenway Park datacaster/stringer for mlb.com and MLBAM (Gameday).

Abstract submissions to NESSIS included statistical applications to baseball, basketball, football, hockey, tennis, golf, soccer, cricket, squash, track, and more. Abstract submissions were critically screened to keep content quality high. Some of the presentations at the 2013 NESSIS will be published in a special sports statistics theme issue of *CHANCE*.

NESSIS was established by Mark Glickman and Scott Evans to enhance the communication and collaboration between statisticians and quantitative analysts connected with sports teams, sports media, and universities. The first NESSIS was held in 2007 and drew more than 100 registrants. The enthusiasm for the 2007 NESSIS inspired a second NESSIS that was held in 2009 and a third in 2011. Continued enthusiasm inspired the 2013 NESSIS, and the symposium is intended to be held biannually.

The reasons for running a sports statistics symposium are predicated on the need for advanced analytic methods in games and sports. The use of statistical methods in sports applications is growing rapidly. Sports teams use statistical analyses to evaluate players and game strategies, and sports associations develop ranking and ratings systems of players and teams. The evolution of the application of statistics to



Above: The NESSIS Symposium audience



Left: Mark Glickman and Richard Smith during the NESSIS.

sports continues to be enhanced with extensive collaboration and interaction between sports analysts and professional statisticians. Unfortunately, opportunities for this collaboration are still relatively uncommon, as academic statisticians often work in isolation developing statistical methods for sports applications, while sports organizations often do not have access to well-trained statistical expertise and cutting-edge statistical tools for the analysis of sports data. The main goal of NESSIS is to bridge this gap.

NESSIS was sponsored by the Statistics in Sports Section of the ASA, the ASA Boston Chapter, the Harvard University Department of Statistics, ESPN Stats and Info, RStudio, Revolution Analytics, and Sports Data Hub.

The NESSIS founders hope that the enthusiasm generated from NESSIS will increase the collaboration between academic statisticians and analysts connected with sports teams and improve the quality of statistical design and analysis in sports. Future NESSIS events will continue to encourage the development of cutting-edge statistical thinking in sports applications and adaptations to evolving data collection technologies. Technical talk videos, presentation slides, photographs, and additional information about the 2013 NESSIS (as well as the 2007, 2009, and 2011 NESSIS events) can be found at [www.nesis.org](http://www.nesis.org). Photos from the conference can be viewed at [www.nesis.org/pictures.html](http://www.nesis.org/pictures.html). ■

# Salary Survey of Business, Industry, and Government Statisticians

James Dias, Patricia Hall, and Varghese George, Biostatistics Consulting and Survey Center, Department of Biostatistics and Epidemiology, Georgia Regents University



This year, the Biostatistics Consulting and Survey Center in the department of biostatistics at the Georgia Regents University was contracted by the American Statistical Association to design and implement a survey of the association's nonacademic members in the United States who are employed by business, industry, or government. Members were asked to report their annual base salary (in dollars) and instructed to include bonuses, incentives, or other forms of monetary reward. Salary was "annualized" for part-time employed respondents. All salary statistics are reported as full-time equivalents in dollars per year. Salary information, in the form of percentiles, is for a 12-month period and has been rounded to the nearest \$500.

The ASA provided a member database of business, industry, and government statisticians. The database consisted of 5,943 members, 5,689 of whom had valid addresses. All members were invited to participate in the survey. The online survey was made available from February 8 to March 15. Responses were received from 2,081 individuals with valid addresses (36.6%). Of the remainder with valid addresses, 3,608 either refused or did not respond (63.4%). Based on the responses received, it was determined that 308 individuals were not eligible to be included in the final analysis.

Those who were ineligible were either employed in academia, unemployed, not employed as a statistician, retired, or reported that they did not meet the questionnaire's definition of a statistician. Seventy-two individuals who were eligible and responded did not report salary information and were re-coded as "nonresponders." When adjusted for delivery failure, eligibility, and non-response, 1,701 (2,081 - 308 - 72) eligible responses were received from an adjusted eligible total of 5,381 (5,689 - 308), for an adjusted response rate of 31.6%.

In the salary tables that follow, the 10th and 90th percentiles for table rows (categories) with fewer than 20 observations were suppressed. Also, all percentiles for table rows (categories) with fewer than 10 observations were suppressed.

Table 1 reports salary percentiles categorized by employer type, geographic region, managerial responsibility, gender, highest degree, years of experience, and application area or job type. Salary percentiles—cross-classified by years of experience, highest degree, and whether the respondent had managerial responsibility—are given in Table 2. Note that there were too few respondents with bachelor's as their highest degree to be included in Table 2. Table 3, however, reports salary percentiles categorized by years of experience for those with a bachelor's as their highest degree. Table 4 reports salary percentiles cross-classified by employer type and highest degree. Salary percentiles cross-classified by employer type, application area or job type, and highest degree are given in Table 5 for those with a master's or doctorate degree.

A final report of the survey is available at [www.amstat.org/careers/pdfs/SPAIGsalarysurvey13.pdf](http://www.amstat.org/careers/pdfs/SPAIGsalarysurvey13.pdf). In addition to the salary tables presented here, the final report details the survey design, its administration and implementation, survey response rate, respondent characteristics, and various descriptive statistics for selected survey items. The survey questionnaire and email invitation/reminder message also are appended to the final report.

The survey was conducted under the directives of Stephen Porzio, ASA associate executive director and director of operations, and the Statistical Partnerships among Academe, Industry, and Government Committee.

**Table 1**—Annual Salaries (\$1000s) of Statisticians in Business, Industry, and Government

		n	Percentiles				
			10	25	50	75	90
<b>Total Respondents</b>		1701	75.0	103.0	136.0	180.0	250.0
Employer	Federal Government	350	80.0	103.0	124.5	148.0	162.0
	State or Local Government	64	38.5	64.5	88.0	112.5	140.0
	For-Profit Business or Industry	1034	82.5	110.0	145.5	200.0	264.0
	Nonprofit Organization	123	57.5	76.0	119.0	180.0	230.0
	Self-Employed or Private Consultant	117	60.0	100.0	150.0	210.0	380.0
	Other	7					
Geographic Region	South Atlantic (DE, DC, GA, FL, MD, NC, SC, VA, WV)	583	80.0	105.0	133.0	160.0	206.0
	Middle Atlantic (NJ, NY, PA)	266	87.0	120.0	174.0	233.0	300.0
	East North Central (IL, IN, MI, OH, WI)	175	73.0	100.0	130.0	172.0	245.0
	Pacific (AK, CA, HI, OR, WA)	219	72.0	100.0	139.0	200.0	275.0
	New England (CT, MA, ME, NH, RI, VT)	111	93.0	117.0	160.0	213.0	289.0
	West North Central (IA, KS, MN, MO, ND, NE, SD)	89	72.5	99.0	122.0	155.0	200.0
	Other (states not listed above)	185	72.0	93.0	125.0	165.0	220.0
Managerial Responsibility	No	1015	71.0	94.5	122.0	155.0	200.0
	Yes	674	96.0	121.0	160.0	220.0	300.0
Gender	Female	542	73.0	99.0	123.0	160.0	206.0
	Male	1153	78.0	107.0	140.0	191.0	260.0
Highest Degree	Bachelor's	70	37.5	55.0	84.5	119.0	172.5
	Master's	711	70.0	92.0	120.0	153.5	203.0
	Doctorate	919	98.0	119.5	150.0	200.0	287.5
Years Experience	0–2	97	47.5	62.0	75.0	90.0	115.0
	3–5	130	58.5	75.0	96.0	116.0	135.5
	6–10	234	76.5	94.5	112.5	140.0	175.0
	11–15	242	93.5	109.0	131.5	170.0	222.0
	16–25	362	95.0	120.0	150.0	200.0	270.0
	26+	603	100.0	126.0	158.0	210.5	285.0
Application Area or Type of Job	Pharmaceuticals	471	108.0	127.5	170.0	230.0	300.0
	Other Medical/Health-Related	357	71.0	93.0	120.0	150.0	200.0
	General Consulting	235	70.0	100.0	130.0	175.0	220.0
	Surveys/Marketing	109	74.0	101.0	130.0	157.5	202.5
	Other	522	70.0	96.0	129.0	165.0	235.0

**Table 2**—Annual Salaries (\$1000s) of Statisticians in Business, Industry, and Government Categorized by Years of Experience, Highest Degree, and Managerial Responsibility

Years Experience	Highest Degree*	n	Percentiles				
			10	25	50	75	90
No Managerial Responsibility							
0–5	Master's	86	62.5	69.0	75.0	89.5	115.0
	Doctorate	74	67.0	82.5	102.5	120.0	135.0
6–10	Master's	73	70.5	81.0	96.0	111.0	123.0
	Doctorate	80	93.5	105.5	119.5	140.0	165.0
11–15	Master's	58	74.0	93.0	109.5	127.0	145.0
	Doctorate	63	100.0	110.0	145.0	182.0	225.0
16–25	Master's	83	90.0	102.5	127.5	151.0	180.0
	Doctorate	112	100.0	123.0	146.5	179.0	240.0
26+	Master's	122	78.0	111.5	137.0	165.0	213.0
	Doctorate	187	101.0	130.0	155.5	193.0	277.0
Managerial Responsibility							
0–5	Master's	17		53.5	80.0	106.0	
	Doctorate	18		96.0	117.0	172.0	
6–10	Master's	39	74.5	95.0	120.0	140.0	170.0
	Doctorate	35	99.0	116.0	140.0	180.0	225.0
11–15	Master's	47	96.0	110.0	125.0	155.0	200.0
	Doctorate	64	120.0	140.5	167.5	202.5	280.0
16–25	Master's	59	105.0	130.0	150.0	184.0	263.0
	Doctorate	101	116.0	155.5	200.0	264.0	410.0
26+	Master's	107	94.0	130.0	164.0	215.0	250.0
	Doctorate	164	110.0	147.0	200.0	258.0	375.0

\*There were too few respondents with a bachelor's degree to include in this table.

**Table 3**—Annual Salaries (\$1000s) of Statisticians in Business, Industry, and Government with a Bachelor's Degree, Categorized by Years of Experience

Years Experience	n	Percentiles		
		25	50	75
0–2	16	37.5	56.0	74.5
3–5	15	53.0	63.0	84.0
6–25	18	80.0	90.5	117.0
26+	18	97.0	125.0	170.5
Overall	67	55.0	84.5	119.0

**Table 4**—Annual Salaries (\$1000s) of Statisticians in Business, Industry, and Government, Categorized by Employer and Highest Degree

Employer	Highest Degree	n	Percentiles				
			10	25	50	75	90
Federal Government	Bachelor's	16		76.0	110.0	142.5	
	Master's	127	67.0	92.0	115.0	140.0	155.5
	Doctorate	207	95.0	109.5	131.0	154.0	170.0
State or Local Government	Bachelor's	5					
	Master's	23	17.5	51.5	70.0	94.0	100.0
	Doctorate	36	60.0	82.5	108.0	123.5	161.0
For-Profit Business or Industry	Bachelor's	36	50.0	71.5	86.5	122.0	190.0
	Master's	467	75.0	100.0	125.0	165.0	220.0
	Doctorate	530	107.0	130.0	172.0	230.0	300.0
Nonprofit Organization	Bachelor's	11		50.0	54.0	74.0	
	Master's	51	57.5	70.5	98.0	130.0	211.0
	Doctorate	61	93.0	115.0	160.0	210.0	245.0
Self-Employed or Private Consultant	Bachelor's	2					
	Master's	39	50.0	100.0	130.0	166.0	226.5
	Doctorate	76	60.0	100.0	175.0	250.0	440.0
Other	Bachelor's	0					
	Master's	3					
	Doctorate	4					



**Table 5**—Annual Salaries (\$1000s) of Statisticians in Business, Industry, and Government, Categorized by Employer, Application Area or Type of Job, and Highest Degree

Employer	Application Area or Type of Job	Highest Degree*	n	Percentiles				
				10	25	50	75	90
Federal Government	Pharmaceuticals	Master's	3					
		Doctorate	19		104.0	125.0	142.0	
	Other Medical/ Health-Related	Master's	33	85.5	92.0	107.0	122.0	140.0
		Doctorate	81	103.0	113.5	136.0	154.0	195.0
	General Consulting	Master's	12		114.5	135.5	147.5	
		Doctorate	24	102.0	111.5	133.0	148.0	155.5
	Surveys/ Marketing	Master's	28	89.0	105.0	137.0	151.5	157.0
		Doctorate	16		117.0	140.0	160.0	
	Other	Master's	34	69.0	90.0	108.0	137.0	156.0
		Doctorate	62	95.0	107.0	129.0	155.0	169.0
For-Profit Business or Industry	Pharmaceuticals	Master's	157	100.0	115.0	150.0	195.5	231.5
		Doctorate	252	121.0	150.0	198.0	250.0	325.0
	Other Medical/ Health-Related	Master's	74	75.0	90.0	116.5	155.0	177.0
		Doctorate	61	92.0	120.0	146.0	200.0	250.0
	General Consulting	Master's	74	70.0	87.0	120.0	149.0	200.0
		Doctorate	49	100.0	117.0	155.5	200.0	270.0
	Surveys/ Marketing	Master's	24	65.0	80.5	107.5	167.5	220.0
		Doctorate	20	104.0	115.0	142.5	191.5	229.5
	Other	Master's	135	72.5	90.0	123.0	151.0	200.0
		Doctorate	148	100.0	121.0	151.5	209.0	280.0
Other (State/Local Government, Nonprofit Organization, Self-Employed, Private Consultant, Other Employers Not Listed Above)	Pharmaceuticals	Master's	12		129.5	145.0	196.5	
		Doctorate	24	100.0	132.5	165.5	250.0	475.0
	Other Medical/ Health-Related	Master's	47	50.0	60.5	75.5	105.0	125.0
		Doctorate	47	79.0	93.0	116.0	169.0	230.0
	General Consulting	Master's	23	66.5	80.0	100.0	144.0	200.0
		Doctorate	44	60.0	100.0	155.0	202.5	250.0
	Surveys/ Marketing	Master's	7					
		Doctorate	7					
	Other	Master's	27	48.0	70.0	100.0	150.0	225.0
		Doctorate	53	70.0	107.0	159.5	200.0	360.0

\*There were too few respondents with a bachelor's degree to include in this table.

# Special *Technometrics* Issue: Conference on Data Analysis (CoDA)

*Exploring data-focused research across the Department of Energy*

Kary Myers, Earl Lawrence, and Hugh A. Chipman



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Shane Reese, Brigham Young University

Curtis Storlie, Los Alamos National  
Laboratory

Matt Taddy, The University of Chicago  
Booth School of Business

Alyson Wilson, North Carolina State  
University

The November 2013 issue of *Technometrics* is a special issue featuring some of the challenging, application-driven work presented at the inaugural Conference on Data Analysis (CoDA) in 2012 in Santa Fe, New Mexico. CoDA 2012 brought together statisticians and other data-focused scientists from across the Department of Energy national laboratories and their academic and industrial collaborators. In addition to 28 invited talks covering varied topics such as renewable energy, dark energy, and high energy physics, CoDA also highlighted the data-intensive, collaborative work of 65 poster presenters, including 20 graduate students. CoDA 2012 had 130 participants from nine national labs, 25 universities, and seven private and public companies. CoDA sponsors included *Technometrics'* two sponsoring societies (the American Statistical Association's Section on Physical and Engineering Sciences and the American Society for Quality).

*Technometrics* provides the perfect forum for these CoDA papers, given the journal's long-standing connection with the applied statistics research at Department of Energy labs. Since its inception in 1959, *Technometrics* has published hundreds of articles by statisticians and scientists at the national laboratories, including McKay, Beckman, and Conover's

1979 paper introducing Latin hypercube designs and the 1979 paper by Golub, Heath, and Wahba introducing generalized cross-validation. Papers written by researchers at Department of Energy labs have won both the Jack Youden Prize (Best Expository Paper) and the Frank Wilcoxon Prize (Best Practical Application Paper) on multiple occasions, and two *Technometrics* editors (Robert Easterling and Max Morris) have worked at national labs.

The articles in this special CoDA issue continue this tradition by highlighting the intent of *Technometrics* "to contribute to the development and use of statistical methods in physical, chemical, and engineering sciences as well as information sciences and technology."

The issue begins with several papers on a variety of networks: The article "Bayesian Nonparametric Models for Community Detection" by **Alyson Wilson, Jiqiang Guo,** and **Daniel Nordman** considers networks defined by social or other interactions, while "Scan Statistics for the Online Detection of Locally Anomalous Subgraphs" by **Joshua Neil, Curtis Storlie, Curtis Hash, Alexander Brugh,** and **Michael Fisk** considers detection of small anomalies in a large, time-dependent computer network. Social networks/media are considered by **Matt Taddy** in "Measuring Political Sentiment on Twitter: Factor Optimal Design for Multinomial Inverse Regression," while power distribution networks are considered by **Earl Lawrence, Scott Vander Wiel,** and **Russell Bent** in "Model Bank State

Estimation for Power Grids Using Importance Sampling.”

These papers are followed by two articles about the analysis of functional data arising from interesting applications. In “Methods for Characterizing and Comparing Populations of Shock Wave Curves,” **Curtis Storlie, Michael Fugate, David Higdon, Aparna Huzurbazar, Elizabeth Francois,** and **Douglas McHugh** consider evaluation of detonators and high-energy explosives. In “A Bayesian Measurement Error Model for Misaligned Radiographic Data,” **Kristin Lennox** and **Lee Glascoe** consider micro-computed tomography data.

At the national labs, reliability is an important area of research, as the next two papers indicate: “Bayesian Methods for Estimating the Reliability of Complex Systems Using Heterogeneous Multilevel Information” by **Jiqiang Guo** and **Alyson Wilson** and “A Case Study on Selecting a Best Allocation of New Data for Improving the Estimation Precision of System and Sub-System Reliability Using Pareto Fronts” by **Christine Anderson-Cook, Lu Lu,** and **Jessica Chapman.**

Computer experiments and high-performance computing are recurring themes at the national labs. In “Computer Model Calibration Using the Ensemble Kalman Filter,” **David Higdon, Matthew Pratola, James Gattiker, Earl Lawrence, Charles Jackson, Michael Tobis, Salman Habib, Katrin Heitmann,** and **Stephen Price** adapt the ensemble Kalman filter to Bayesian computer model calibration. Computer model calibration is also the topic of “Prediction and Computer Model Calibration Using Outputs from Multi-fidelity Simulators” by **Derek Bingham, Joslin Goh, James Holloway, Michael Grosskopf, Carolyn Kuranz,** and **Erica Rutter.** In that article, field data are combined with outputs from multi-fidelity simulators, with an application

in radiative shock hydrodynamics. In “A Parallel EM Algorithm for Model-Based Clustering Applied to the Exploration of Large Spatio-Temporal Data,” **Wei-Chen Chen, George Ostrouchov, David Pugmire,** and **Prabhat** and **Michael Wehner** develop parallel computation for EM estimation of mixture distribution models.

The issue concludes with three papers considering different and interesting data formats: rotational data in “Point Estimation of the Central Orientation of Random Rotations” by **Bryan Stanfill, Ulrike Genschel,** and **Heike Hofmann;** pairs of hyperspectral satellite images before and after release of a chemical plume in “Matched-Pair Machine Learning” by **James Theiler;** and forensic analysis of profilometry data in “Significance of Angle in the Statistical Comparison of Forensic Tool Marks” by **Amy Lock** and **Max Morris.**

The theme of this issue is clearly hard applications and collaborative research, with most papers written jointly by statisticians and scientists as they consider challenging, life-sized problems.

As this special issue of *Technometrics* goes to press, plans are under way for CoDA 2014, to be held March 5–7. The invited program will explore data-focused research across the Department of Energy, featuring sessions on energy and the environment, signature discovery, data-intensive applied science, uncertainty quantification, national security, and Big Data and exascale computing. See [cnls.lanl.gov/coda](http://cnls.lanl.gov/coda) for more information, and consider joining us to present your work in Santa Fe. In the meantime, we thank the members of the CoDA guest editorial board whose hard work made this special issue possible, and we hope you enjoy this *Technometrics* collection of collaborative applied statistical work. ■

## Call for Editor Nominations

The ASA invites nominations and applications for the position of editor of the *The American Statistician* (TAS) and *Journal of Quantitative Analysis in Sports* (JQAS).

TAS publishes articles of general interest to the statistical profession. Articles address topics that are important to a broad group of statisticians and ordinarily are not highly technical.

For more information about TAS, see <http://bit.ly/181NEMy> and <http://bit.ly/1bgrgPc>.

JQAS is a statistics journal that publishes articles addressing questions from a wide variety of sports and dealing with subjects such as tournament structure, frequency and occurrence of records over time, measurement of performance of athletes, and ranking of teams.

For more information about JQAS, visit <http://bit.ly/181OIXp>. For both journals, the new editor will serve from 2015 through 2017, with the transition beginning late summer or early fall of 2014.

To apply or send in a nomination, include the name of the journal, the person's name, email address, and a brief description of his or her qualifications to [journals@amstat.org](mailto:journals@amstat.org). The search committee will contact each nominee to see if she or he is interested in applying.

The deadline for nominations for both journals is December 6.

All nominations and applications should be sent electronically to [journals@amstat.org](mailto:journals@amstat.org). Applications should be sent no later than January 15, 2014, and include a CV, names of three references, and letter of interest in the position that includes a brief statement describing the vision for the publication, directions the candidate would pursue, and contributions she or he would make if selected as editor.

# CONFERENCE ON STATISTICAL PRACTICE MENTORING PROGRAM TO HELP PROMOTE STATISTICS

Eric Vance, LISA (Laboratory for Interdisciplinary Statistical Analysis),  
Virginia Tech



Eric Vance is an assistant research professor at Virginia Tech. He is the director of LISA, a faculty advisor for StatCom, and a member of the Committee on Applied Statisticians and CSP steering committee. He is also next year's chair-elect for the Section on Statistical Consulting and the vice chair of Statistics Without Borders.

**T**hree years ago, I was stumped professionally. I knew about a process that would help me become a better statistician, something that would help me improve my statistical collaboration skills. I knew what my goals were, but I didn't know how to achieve them. I was stuck. And I wasn't just stuck for myself. As director of LISA, the Laboratory for Interdisciplinary Statistical Analysis at Virginia Tech, I wanted to use this process to help my students and colleagues become better statistical collaborators. I wasn't just failing myself; I also was failing those who looked to me for leadership.

Two years earlier, I had attended a session at JSM in which a member of the audience commented that statisticians who work with other people—such as clients and business colleagues—should collect and analyze data about their interactions to improve their practice of statistics. Statisticians could video record a meeting with a client or colleague, analyze the video, and identify opportunities for improvement. I was struck by this idea that I could use statistical thinking (collecting data, analyzing the data, and interpreting the results) to improve my own practice of statistics.

So, a few months into my job, I bought a video camera. It sat unused on my shelf for a year until one day I asked a client if we could record our meeting. She was fine with it, and so was I. After five minutes, we both forgot that the camera was rolling. Recording meetings was easy! I videoed several more meetings; however, these videos sat unwatched on my hard drive for the next year. Two years after purchasing the

video camera, I finally sat down to re-watch one of my meetings.

Here's where I was stumped. I couldn't watch my meetings. I didn't know how to watch my meetings. I would watch for 15 seconds, get bored, and switch to some other task. I needed expert advice about how to analyze the data I had collected. I thought I could do it by myself, but I had tried and failed and I felt my professional growth was stalling as a result. I decided I needed a statistical consultant. More importantly, I realized I needed a mentor.

I contacted the person at JSM who had made the comment about using video and invited him to give a talk at Virginia Tech. This consultant was Doug Zahn, and he agreed to meet with me and show the faculty, staff, and students in the VT statistics department and LISA how to use video effectively. After spending some time establishing rapport, he agreed to become my mentor.

One of my goals for this new mentoring relationship was to improve my statistical collaboration skills. Zahn helped me make progress toward that goal by showing me how to harness the power of video. The initial trick was easy—don't try to watch the whole video, just watch a short two-minute clip. The second trick was just as simple. Watch for one thing at a time. I quickly learned those basics for analyzing video recordings of statistical collaboration meetings.

Another of my goals was to learn how to better coach and give feedback to the students I mentor in LISA so they could use video to improve their statistical collaboration skills. With encouragement from my mentor, LISA established a series of video coaching and feedback sessions. At least once per semester, each statistical collaborator who regularly meets with clients has a meeting with a client recorded and then reviewed in a small group setting. So far, we have collected and analyzed data on more than 150 statistical collaboration meetings, each time refining and improving our process for statistical collaboration and improving our skills for practicing statistics.

A mentor can unlock your potential and help open doors of opportunity. Sometimes, you need an ally, an external voice to encourage you to identify and pursue your goals. That's what my mentor has done for me. That's what I've tried to do for the students in LISA whom I mentor. Because we have a process in LISA for improving our practice of statistics by improving our relationships with our clients—how we structure a meeting, how we ask questions, how we make sure we understand their research problem and what their overall goals are, and how we explain statistics to them so our statistical solution becomes a solution they understand and can use—we have been able to constantly improve and have achieved



great success. Last year, LISA met with researchers on 412 collaborative projects. Approximately 65% of these clients provided written feedback, of which 97% was positive!

As the result of great mentoring, LISA is now in the position to provide mentoring and training each year to a few statisticians from developing countries lacking mentors. LISA 2020 ([www.lisa.stat.vt.edu/LISA2020](http://www.lisa.stat.vt.edu/LISA2020)) is the name of this new program to create a network of 20 statistical collaboration laboratories in developing countries by 2020 by mentoring and training statisticians to communicate and collaborate with nonstatisticians. Those receiving this mentoring will return to their home countries and create a statistical collaboration laboratory based on their experience working in LISA. We aim to act on the great mentoring we have received and multiply it by 20.

We statisticians have an opportunity to affect so many people and organizations, but it appears at present that statisticians suffer from a lack of appreciation and visibility. Somehow and for some reason, statistics is undervalued and statisticians don't get their fair share of the credit. We need to promote our profession by promoting one another. Statisticians need to help one another by mentoring junior colleagues and by valuing the wisdom of those more experienced than ourselves. Be a mentor. Seek out a mentor. Do both!

There are many ways to find a mentor and to mentor younger statisticians. Reach out to your colleagues. Reconnect with old friends and classmates. Focus on creating a network of mentors and mentees so you don't rely on just one mentoring relationship. This year, the ASA Committee on Applied Statisticians (CAS) matched 17 mentor/mentee pairs in a pilot mentoring program that will open for another round of mentor/mentee matching in 2014. Resources on mentoring can be found at <http://community.amstat.org/CAS/Mentoring1>.

To provide one more opportunity for statisticians to find a mentor or to become a mentor, the steering committee of the Conference on Statistical Practice (CSP), in collaboration with CAS, has developed an exciting new mentoring program for those attending CSP February 20–22, 2014, in Tampa, Florida.

The CSP Mentoring Program is designed to help you establish a mentoring relationship that will provide you with an opportunity to realize both your personal and professional development goals. Here is how this program will work for CSP 2014:

- CSP registrants may express interest in participating as either a mentor or mentee by

## CSP Offers More

In addition to mentoring, the ASA Conference on Statistical Practice, to take place February 20–22 in Tampa, Florida, will provide attendees opportunities to learn new statistical methodologies and best practices in statistical analysis, design, consulting, and statistical programming. This year, CSP also will provide opportunities for attendees to further their careers and strengthen their relationships in the statistical community.

The conference is designed to aid applied statisticians in improving their ability to consult with and help customers and organizations solve real-world problems. Learn statistical techniques that apply to your job as an applied statistician. Learn how to better communicate with customers! Learn how to have a positive impact on your organization!

CSP also will feature a career placement service that will connect employers and applicants so they can pursue informal meetings and interviews. Applicants who attend are able to research current job openings and contact employers they are interested in pursuing via our online system in advance of the conference. More information can be found at [www.amstat.org/meetings/csp/2014/placement.cfm](http://www.amstat.org/meetings/csp/2014/placement.cfm).

To register for the conference, fill out the form on the following pages or visit [www.amstat.org/meetings/csp/2014/conferenceinfo.cfm](http://www.amstat.org/meetings/csp/2014/conferenceinfo.cfm). Discounts apply if you register before January 2, 2014.

submitting some basic information through the online mentoring program interest form.

- The mentoring program leadership will match mentors and mentees based on information submitted through the web form. The participants will be sent a mentoring welcome packet and email message about their mentor/mentee match. We will then invite the mentors and mentees to make arrangements to meet at CSP.
- Mentors and mentees should expect to hear from the program leadership within one month of completing the mentoring program interest form, and well in advance of the conference.

Interested in participating? All you need to do is register for the conference and the ASA will send you the program information link. There is no cost to participate in this program. For information, visit [www.amstat.org/meetings/csp/2014/mentoring.cfm](http://www.amstat.org/meetings/csp/2014/mentoring.cfm).

To find out more about CSP, visit [www.amstat.org/meetings/csp/2014/conferenceinfo.cfm](http://www.amstat.org/meetings/csp/2014/conferenceinfo.cfm).

The goal of this CSP mentoring program is to help individuals advance in their careers, improve their practice of statistics, and cumulatively promote the practice of statistics and visibility of our field. ■

## REGISTRATION FORM

Hilton Tampa Downtown, Tampa, Florida

[www.amstat.org/meetings/csp/2014](http://www.amstat.org/meetings/csp/2014)

**INSTRUCTIONS:** 1. Print or type all information and retain a copy for your records. 2. Use a separate form for each registrant. 3. Mail form with payment to CSP Registration, 732 N. Washington Street, Alexandria, VA 22314. Fax form (credit card only) to (703) 684-2037. Registration form must be received by February 6, 2014.

Forms received without payment will not be processed. Purchase orders will not be accepted. No exceptions. ASA Federal ID #53-0204661

### ATTENDEE INFORMATION

ASA Member  SSC Member \_\_\_\_\_  
ASA ID # (if known)

Name \_\_\_\_\_

Preferred First Name for Badge \_\_\_\_\_

Organization \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ State/Province \_\_\_\_\_ ZIP/Postal Code \_\_\_\_\_

Country (non-U.S.) \_\_\_\_\_


Phone \_\_\_\_\_

Email \_\_\_\_\_

In case of emergency, list the name and phone number of the person we should contact (remains confidential).

Emergency Contact \_\_\_\_\_

- Update my ASA customer contact information with this meeting contact information.  
 Exclude my information from contact lists managed by the ASA for use by outside entities, including offers for onsite receptions or activities and booth giveaways.  
 Exclude my name from the conference attendee roster that will appear on the conference website.

 **This meeting is ADA accessible.**  
 Please check here if you need special services due to a disability and attach a statement regarding your needs.

### PAYMENT

Check/money order enclosed payable to the **American Statistical Association** (in U.S. dollars on a U.S. bank)

Credit Card  American Express  Discover  MasterCard  VISA

Card Number \_\_\_\_\_

Expiration Date \_\_\_\_\_ Security Code \_\_\_\_\_

Name of Cardholder \_\_\_\_\_

Authorizing Signature \_\_\_\_\_

### REGISTRATION FEES (required)

	By Jan. 2	Jan. 3–Feb. 6	
<input type="checkbox"/> ASA Member	\$355	\$415	\$ _____
<input type="checkbox"/> New* Member	\$505	\$560	\$ _____
<input type="checkbox"/> Nonmember	\$545	\$600	\$ _____
<input type="checkbox"/> Student	\$170	\$170	\$ _____
<input type="checkbox"/> ASA/SSC Accredited Member (PStat®/A.Stat.)	\$285	\$285	\$ _____

\*Includes discounted first-year ASA dues; not available to renewing or recently lapsed members.

The ASA reserves the right to adjust member and/or accreditation registration type to an eligible type and to charge the difference if stated membership and/or accreditation is not currently active. In such an event, you will be notified first and given the opportunity to update your membership.

### ADDITIONAL COURSE FEES (optional)

See the second page of this form or visit [www.amstat.org/meetings/csp/2014](http://www.amstat.org/meetings/csp/2014) for course details. Space is limited.

#### Full-Day Short Courses—February 20, 8:00 a.m.–5:00 p.m.

Oct. 1–Jan. 2—\$300 members and students; \$240 Pstat®/A.Stat.; \$350 nonmembers  
 Jan. 3–Feb. 6—\$345 members and students; \$240 Pstat®/A.Stat.; \$395 nonmembers

- SC1: Enhancing Big Data Projects Through Statistical Engineering \$ \_\_\_\_\_  
 SC2: Design and Analysis of Experiments Using Generalized Linear Mixed Models \$ \_\_\_\_\_  
 SC3: Elegant R Graphics with ggplot2 \$ \_\_\_\_\_

#### Half-Day Short Courses—February 20

Oct. 1–Jan. 2—\$200 members and students; \$160 Pstat®/A.Stat.; \$250 nonmembers  
 Jan. 3–Feb. 6—\$235 members and students; \$160 Pstat®/A.Stat.; \$285 nonmembers

- 8:00 a.m.–12:00 p.m.**  
 SC4: Career Development Within Your Organization \$ \_\_\_\_\_  
 SC5: Modern Regression for Big Data Problems \$ \_\_\_\_\_  
 SC6: Practical Bayesian Computation Using SAS \$ \_\_\_\_\_

#### 1:00 p.m.–5:00 p.m.

- SC7: An Introduction to R for Data Analysts \$ \_\_\_\_\_  
 SC8: Peering into the Future: Introduction to Time Series Methods for Forecasting \$ \_\_\_\_\_  
 SC9: Text Analytics \$ \_\_\_\_\_

#### Tutorials—February 22, 1:30 p.m.–3:30 p.m.

Oct. 1–Jan. 2—\$60 members and students; \$50 Pstat®/A.Stat.; \$70 nonmembers  
 Jan. 3–Feb. 6—\$75 members and students; \$50 Pstat®/A.Stat.; \$85 nonmembers

- T1: Creating Statistical Graphics with ODS in SAS® Software \$ \_\_\_\_\_  
 T2: Learning Association Rules from Large-Scale Databases \$ \_\_\_\_\_  
 T3: Model Selection for Linear Models with SAS/STAT® Software \$ \_\_\_\_\_  
 T4: Learning and Improving Skills to Become an Effective Statistical Collaborator \$ \_\_\_\_\_

#### Practical Computing Expos—February 22, 1:30 p.m.–3:30 p.m.

Included in registration fee. Pre-registration is requested to ensure proper set-up and preparation.

- PCE1: Introduction to Visual Analytics and Analyzing Big Data  
 PCE2: Hear What Your Data Is Telling You with JMP & JMP Pro II  
 PCE3: Statistical Analysis and Data Visualization Using Statgraphics

### CAREER PLACEMENT (optional)

Post your résumé for viewing by interested employers. This is an online-only service. Visit [www.amstat.org/meetings/csp/2014/placement.cfm](http://www.amstat.org/meetings/csp/2014/placement.cfm) for details.

	ASA Member	Nonmember	
<b>Student</b>	<input type="checkbox"/> \$50	<input type="checkbox"/> \$75	\$ _____
<b>Nonstudent</b>	<input type="checkbox"/> \$75	<input type="checkbox"/> \$150	\$ _____

**TOTAL FEES:** \$ \_\_\_\_\_

### CANCELLATION POLICY

Cancellations received by January 2, 2014, will be refunded, less 20% all items. Requests for refunds received after January 2 will not be honored. All cancellations must be made in writing to [asainfo@amstat.org](mailto:asainfo@amstat.org), via fax to (703) 684-2037, or mailed to CSP Registration, 732 N. Washington Street, Alexandria, VA 22314.

# Courses

Conference registration is required. For additional information, visit [www.amstat.org/meetings/csp/2014](http://www.amstat.org/meetings/csp/2014).

## Full-Day Short Courses

Thursday, February 20

8:00 a.m.–5:00 p.m.

### SC1: Enhancing Big Data Projects Through Statistical Engineering

Instructors: Ron Snee, Snee Associates; Roger Hoerl, Union College; and Richard DeVeaux, Williams College

Massive data sets, or Big Data, have become more common recently, due to improved technology for data acquisition, storage, and processing of data. New tools have been developed to analyze such data, including classification and regression trees (CART), neural nets, and methods based on bootstrapping. These tools make high-powered statistical methods available to not only professional statisticians, but also to casual users. As with any tool, the results to be expected are proportional to the knowledge and skill of the user, as well as the quality of the data. Unfortunately, much of the professional literature may give casual users the impression that if one has a powerful enough algorithm and a lot of data, good models and good results are guaranteed at the push of a button.

Conversely, if one applies sound principles of statistical engineering to the Big Data problem, several potential pitfalls become obvious. We consider the consequences of four major issues: 1) lack of a disciplined approach to modeling, 2) use of “one shot studies” versus sequential approaches, 3) assuming all data are high-quality data, and 4) ignoring subject matter knowledge.

8:00 a.m.–5:00 p.m.

### SC2: Design and Analysis of Experiments Using Generalized Linear Mixed Models

Instructors: Walt Stroup, University of Nebraska, and Elizabeth Claassen, University of Nebraska

Course presents applications of generalized linear mixed models (GLMMs). Focus is especially on GLMMs for design and analysis of experiments with non-normal data. Material is at an applied level, accessible to those familiar with linear models.

Participants will learn that GLMMs are an encompassing family and understand the differences and similarities in estimation and inference within the family. We discuss issues in working with correlated, non-normal data such as overdispersion, marginal and conditional models, and model diagnostics. We present GLMMs for common non-normal response variables—count, binomial and multinomial, time-to-event, continuous proportion—in conjunction with common designs—blocked, split-plots, repeated measures. Numerous examples will be presented.

The afternoon continues with GLMM applications and associated issues, including comparison of estimation methods, computation of power and sample size, model selection, and inferential tasks with and without adjustments.

Numerous examples will be used to illustrate all topics. Examples use tools in SAS/STAT and R, but the principles should be applicable to any GLMM-capable software.

8:00 a.m.–5:00 p.m.

### SC3: Elegant R Graphics with ggplot2

Instructor: Isabella Ghement, Ghement Statistical Consulting Company Ltd.

R comes equipped with several packages for producing elegant graphics, and ggplot2 is one of the most powerful and versatile of these packages. This one-day course will provide participants with an in-depth introduction to ggplot2 in the context of graphics production for exploratory and confirmatory data analyses. Participants will learn how to use ggplot2 to produce, customize, and export publication-quality graphics that facilitate the communication of data-driven insights. In particular, participants will gain an understanding of the ggplot2 philosophy, syntax, and capabilities; learn how to create standard and advanced statistical graphs; and become skilled at customizing graphs through the addition of labels, titles, symbols, colors, legends, scales, annotations, layers, and themes. Participants also will learn how to combine the presentation of numerical and visual data summaries in the same graph, save ggplot2 output in a variety of standard graphical formats, and embed this output in automated reports and presentations. This hands-on course will offer participants the opportunity to practice the use of ggplot2 in real time. Participants are required to have basic knowledge of R and bring their laptops pre-installed with R and ggplot2.

## Half-Day Short Courses

Thursday, February 20

8:00 a.m.–12:00 p.m.

### SC4: Career Development Within Your Organization

Instructor: William Williams, Organizational Learning Consultant

There are two fundamental keys to successfully pursuing opportunities within your organization: self-knowledge and the ability to represent your capabilities to other people. This workshop will help you with both. Through an assessment, you'll identify and describe specifically what you're good at and where your strongest interests and skills lie. This will allow you to make sound decisions about where to focus your energies for enhancing your career. We will include information about how to network effectively within your organization.

8:00 a.m.–12:00 p.m.

### SC5: Modern Regression for Big Data Problems

Instructor: Simon Sheather, Texas A&M University

In the past, regression applications have focused on modeling relationships based upon a relatively small amount of data. Many of these arise from statistically designed experiments or field trials. However, regression modeling is being applied increasingly to problems involving massively large and complex data and retrospective data collected routinely by businesses and government organizations. Does this change the approach statisticians take to modeling using regression techniques?

This workshop explores this question and provides concrete, practical advice for applying modern regression to solving big data problems. The presenter is author of *A Modern Approach to Regression with R*.

8:00 a.m.–12:00 p.m.

### SC6: Practical Bayesian Computation Using SAS

Instructor: Fang Chen, SAS Institute Inc.

This half-day course reviews the basic concepts of Bayesian inference and focuses on the practical use of Bayesian computational methods. The objectives are to familiarize statistical programmers and practitioners with the essentials of Bayesian computing and equip them with computational tools through a series of worked-out examples that demonstrate sound practices for a variety of statistical models and Bayesian concepts.

The first part of the course provides a gentle introduction to Bayesian inference and covers the fundamentals of prior distributions and concepts in estimation. The course also will cover MCMC methods and related simulation techniques, emphasizing the interpretation of convergence diagnostics in practice.

The second part of the course involves applications using Bayesian capabilities in SAS/STAT software in the GENMOD, LIFEREG, PHREG, and FMM procedures. Examples will include methods such as linear regression, generalized linear models, survival analysis, and finite mixture models.

The third part of the course takes a topic-driven approach to cover broad Bayesian topics such as random-effects models, sensitivity analysis, prediction, and model assessment.

1:00 p.m.–5:00 p.m.

### SC7: An Introduction to R for Data Analysts

Instructor: Robert Kabacoff, Management Research Group

R has become one of the most popular languages for data analysis and graphics. This course will provide a practical introduction to this comprehensive platform. Participants will learn to import data into R from a variety of sources; clean, recode, and restructure data; and apply R's many functions for summarizing, modeling, and graphing data. Both basic and more advanced forms of data analysis will be covered. Additional topics include navigating R's comprehensive help systems, practical advice for processing data, common programming mistakes to avoid, and useful functions for data mining.

1:00 p.m.–5:00 p.m.

### SC8: Peering into the Future: Introduction to Time Series Methods for Forecasting

Instructor: David Dickey, North Carolina State University

This workshop will provide a practical guide to time series analysis and forecasting, focusing on examples and applications in modern software. Students will learn how to recognize autocorrelation when they see it and how to incorporate autocorrelation into their modeling. Models in the ARIMA class and their identification, fitting, and diagnostic testing will be emphasized and extended to models with deterministic trend functions (inputs) and ARMA errors. Diagnosing stationarity, a critical feature for proper analysis, will be demonstrated. After the course,

## Courses (cont.)

Conference registration is required. For additional information, visit [www.amstat.org/meetings/csp/2014](http://www.amstat.org/meetings/csp/2014).

students should be able to identify, fit, and forecast with this class of time series models and be aware of the consequences of having autocorrelated data. They should be able to recognize nonstationary cases in which the differences in the data, rather than the levels, should be analyzed. Underlying ideas and interpretation of output, rather than code, will be emphasized. No previous experience with any particular software is needed. Examples will be computed in SAS, but most modern statistical packages such as SPSS, R, STATA, etc. can be used for time series analysis.

### **1:00 p.m.–5:00 p.m.** **SC9: Text Analytics**

**Instructor:** Edward Jones, Texas A&M Statistical Services

Text Analytics is a new interdisciplinary area that blends methodology from statistics, computer science, and natural language processing. Understanding the terminology and general approach to the statistical analysis of large collections of text data is increasingly critical to connecting statisticians to important Big Data problems.

Computer scientists have developed sophisticated algorithms for extracting and compiling complex summaries of text data. Statisticians have adaptive statistical methods for text analytics designed to solve sophisticated business and government problems. This is rapidly evolving as the available data and applications change. In the beginning, text analytics involved the analysis of simple word counts. Now, with available software for natural language processing, text analytics is challenged with the analysis of contextual information. This half-day workshop explores the terminology, common methodology, and software for analysis of large, complex text data.

## Tutorials

### **Saturday, February 22**

#### **1:30 p.m.–3:30 p.m.** **T1: Creating Statistical Graphics with ODS in SAS® Software**

**Instructor:** Warren Kuhfeld, SAS

SAS 9.2 provides ODS Graphics, new functionality used by statistical procedures to create statistical graphics as automatically as they create tables. ODS Graphics is also used by new Base SAS procedures designed for graphical exploration of data. This tutorial is intended for statistical users and covers the use of ODS Graphics in statistical analysis. You will learn how to:

- Request graphs created by statistical procedures
- Use the new SGPLOT, SGPANEL, SGSCATTER, and SGRENDER procedures to create customized graphs
- Access and manage your graphs for inclusion in web pages, papers, and presentations
- Modify graph styles
- Make immediate changes to your graphs using a point-and-click editor
- Make permanent changes to your graphs with template changes
- Specify other options related to ODS Graphics

#### **1:30 p.m.–3:30 p.m.** **T2: Learning Association Rules from Large-Scale Databases**

**Instructor:** Rachael Hageman Blair, The University at Buffalo

Predicting associations between variables is a fundamental task in data mining. Association rule analysis is widely used to identify novel relationships between variables in extremely large databases, especially in commercial applications. A major goal is to find sets of variables (items) that appear most frequently together. Algorithms specifically designed to handle large transaction databases are described. Marketing data are analyzed in the R programming language with open source software to demonstrate the method and interpretation of predicted associations.

#### **1:30 p.m.–3:30 p.m.** **T3: Model Selection for Linear Models with SAS/STAT® Software**

**Instructor:** Funda Gunes, SAS Institute

When you are faced with a predictive modeling problem that has many possible predictor effects, a natural question is, "What subset of the effects provides the best model for the data?" This workshop explains how you can address this question with model selection methods in SAS/STAT software. The workshop also explores the practical pitfalls of model selection. The workshop focuses on the GLMSELECT procedure and shows how it can be used to mitigate the intrinsic difficulties of model selection. You will learn how to use model selection diagnostics, including graphics, for detecting problems; use of validation data to detect and prevent under-fitting and over-fitting; modern penalty-based methods, including LASSO and adaptive LASSO, as alternatives to traditional methods such as stepwise selection; and bootstrap-based model averaging to reduce selection bias and improve predictive performance. This workshop requires an understanding of basic regression techniques.

#### **1:30 p.m.–3:30 p.m.** **T4: Learning and Improving Skills to Become an Effective Statistical Collaborator**

**Instructor:** Eric Vance, Virginia Tech

This fast-paced tutorial will get you up to speed on how to effectively collaborate with nonstatisticians to solve real-world problems and implement solutions. Based on Vance's methods used to train more than 130 graduate students to become effective statistical collaborators for LISA (Virginia Tech's Laboratory for Interdisciplinary Statistical Analysis), this tutorial will introduce you to the POWER process for structuring efficient meetings, lead you through role plays to practice what you have learned, and show you how to systematically improve your statistical collaboration skills through the recording and analysis of video.

## Practical Computing Expos

### **Saturday, February 22**

#### **1:30 p.m.–3:30 p.m.** **PCE1: Introduction to Visual Analytics and Analyzing Big Data** Mike Speed and Tom Bohannon, SAS Institute

This course teaches the basics of exploring data and building reports using SAS Visual Analytics and High Performance Techniques.

#### **1:30 p.m.–3:30 p.m.** **PCE2: Hear What Your Data Is Telling You with JMP & JMP Pro 11** Scott Lee Wise, SAS Institute Inc., JMP Business Division

New JMP & JMP Pro 11 software from the SAS Institute will help make finding the story in your data faster and easier. Newly available techniques will allow you to really separate the signal from the noise (get robust, handle messy data, etc.) and follow clues to new breakthroughs (transform variables, screen important variables, etc.). These customer-inspired advances will really help speed up the pace of discovery, from data import to analysis to presentation.

#### **1:30 p.m.–3:30 p.m.** **PCE3: Statistical Analysis and Data Visualization Using Statgraphics** Neil W. Polhemus, Statpoint Technologies, Inc.

This presentation will demonstrate techniques for the analysis and visualization of data using Statgraphics. It will cover methods for modeling a single variable, comparing multiple samples, visualizing multivariate data, determining relationships between variables, and modeling time series data. It also will consider graphical methods that are useful for constructing and analyzing designed experiments. Special attention will be devoted to Statlets, a set of procedures added to the latest version of Statgraphics that use graphical methods in a dynamic fashion. The presentation will include a set of Statlets created to interactively select good statistical models. The methodologies covered are applicable to all data analysts and will be demonstrated using data of the types commonly used in practice.



## SCIENCE POLICY

# Influencing Federal Research Funding Policy—White Papers?

Steve Pierson, ASA Director of Science Policy

In March 2012, the White House Office of Science and Technology Policy (OSTP) rolled out with great fanfare their Big Data Initiative (<http://1.usa.gov/1cATbgB>), a \$200 million multi-agency initiative to help solve some of the nation's most pressing challenges. In summer 2011, OSTP rolled out the \$40 million National Robotics Initiative (<http://1.usa.gov/15XK2wg>) and, in April 2013, President Obama announced the \$100 million BRAIN Initiative (<http://1.usa.gov/1bKgG7c>), a new research effort to better understand the human mind and uncover new treatments.

These high-profile initiatives are only three science-related initiatives out of many more on a host of topics. Few, if any, focus on statistical science. Why are there no statistical science initiatives, and what does the statistical science community need to do to see statistic science initiatives in the future?

Because of the StatsNSF initiative and the ASA recommendation of a chief statistical scientist at NSF (<http://bit.ly/1g3sVhb>), I have been discussing with my counterparts in other professional societies the challenges that the statistical community faces in terms of raising our profile in the scientific community. On the topic of Big Data and the statistical science community's contention that the federal policymakers should be engaging statisticians more (yielding better science), one counterpart quipped that computer scientists have dominated the Big Data landscape for two reasons: their sheer numbers and the white papers generated from the Computing Research Association (CRA) Computing Community Consortium (CCC).

Indeed, it didn't take much digging to see the influence of CCC white papers ([www.cra.org/cccvisioning/ccc-led-white-papers](http://www.cra.org/cccvisioning/ccc-led-white-papers)). For example, a set of slides posted to the CRA website (<http://bit.ly/GRXXIy>) shows the progression from the publishing of a May 2009 CCC report, "From Internet to Robotics: A Roadmap for U.S. Robotics," to a 2010 OSTP directive to all agencies to include robotics in fiscal year 2012 (FY12) budgets to the announcement of the National Robotics Initiative in 2011. The next slide shows a similar progression for the OSTP Big Data, starting with a "series of white papers prepared in fall 2010 relating data mining, machine learning, predictive modeling, etc., to national challenges." A glossy CCC brochure, titled "The Computing Community Consortium: A

Catalyst and Enabler for the Computing Research Community," explains that the CCC "was established in 2006 through a cooperative agreement between the National Science Foundation and Computing Research Association to provide a voice for the national computing research community. The CCC facilitates the development of a bold, multi-themed vision for computing research and communicates that vision to a wide range of major stakeholders." It also documents the close ties of CRA and CCC to the Obama presidential transition team and OSTP through a quote from Tom Kalil, deputy director for policy at OSTP, "These [white] papers and workshop reports have had a clear influence on the administration's budget and recruiting decisions and have already sparked collaborations between government, industry, and academia."

The CCC white papers—ranging in length from two to 20 pages and including research gaps, opportunities, and recommendations—cover a wide range of topics, from Big Data and informatics to synthetic biology and personalized medicine to the smart grid and transportation.

My CRA counterpart, Peter Harsha, also told me a key to success is to tie a white paper to current national priorities, whether they are health care, sustainability, data analytics, or education.

CCC also hosts visioning activities (<http://bit.ly/1c5F5B7>), "workshops that will create exciting visions and agendas for research at the frontiers of computing. Successful workshops will articulate new research visions; galvanize community interest in those visions; and mobilize support for those visions from the computing research community, government leaders, and funding agencies."

Other organizations also have had success with white papers or their equivalent. The idea for the BRAIN initiative was sparked at a 2011 conference and defined in a 2012 *Neuron* paper, "The Brain Activity Map Project and the Challenge of Functional Connectomics" (<http://bit.ly/19qBvB4>). Astronomy projects are proposed and prioritized in the Astronomy and Astrophysics Decadal Survey, produced every 10 years by the National Research Council of the National Academy of Sciences.

One could argue that the Big Data and BRAIN initiatives include statistical science. I would contend, however, that statistical science is included on the margins. The role of statistical science in these

initiatives is not clearly laid out, leaving it to the statistical science community to try to convince program officers why they should be funding statistical science projects as part of the initiative. It would be more effective to have the statistical components (i.e., the statistical questions to be addressed, what it would take to address them, etc.) laid out in the initiative so the funding agencies seek out the statistical scientists through solicitations, review panels, advisory committees, and workshops.

Initiatives happen at many levels. The BRAIN initiative is an out-of-the-ballpark grand slam. Just as important are the more modest white papers that, say, lead to a new program at the division level at NSF, or the equivalent at an NIH Institute. Indeed, Sastry Pantula at the Division of Mathematical Sciences in 2012 reached out to the ASA and our sister math societies for “budget drivers,” proposals/white papers that NSF should consider funding in future years. At the printing of this article in FY14, NSF is already planning its proposals for FY15 and beyond. Pantula was therefore asking for ideas about statistical science (and mathematics) to inject into the internal NSF process for funding initiatives. Indeed, when StatsNSF sent out questions to the community in January 2013 (<http://bit.ly/S8lr08>), at least one of the questions was getting at budget drivers: “Are there complex or massive data

problems that might be amenable to joint attack by several disciplines?” We have yet to provide budget driver ideas to NSF, and how to do so is, of course, the topic of this column.

While I think the white paper approach has potential for the statistical science community, I think more discussion and exploration are needed. In particular, the CCC is supported in part by the NSF, and the Astronomy and Astrophysics Decadal Survey for 2010 was supported by NASA, NSF, and the Department of Energy. Could the statistical science community find support to produce such white papers and vision activities? If we were able to produce the white papers, what would be the steps to take to ensure their influence at federal funding agencies and the White House Office of Science and Technology Policy? Are there more productive routes the statistical community should be taking to spur federal research funding initiatives with a larger emphasis on statistical science?

This month, as the capstone to the International Year of Statistics, the Future of Statistical Sciences Workshop (<http://bit.ly/15rqEWb>) is being held in London. I’m optimistic that the workshop and its report will serve as both an effective visioning activity and a white paper, thereby helping to inform the questions asked above. ■

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# Communicating with Clients

Robert Starbuck

A “client” is someone who plans to use your skills to achieve an objective that matters to them. During your career as a professional statistician, you will engage with numerous clients, many of whom are likely to not be trained in statistics. Clients come in a variety of flavors (e.g., a colleague who is seeking your advice about how to solve a problem or use an unfamiliar statistical technique, a project team leader who needs your input on how to design a new product developmental program, or a supervisor who needs your expertise to address a business objective).

Some of the most important factors in working with a client are the following:

- Understanding the client’s objectives
- Ability to meet the client’s deadlines
- Data, analyses, and reports needed to achieve the objectives
- Adequate communication with the client

## Client’s Objectives

To succeed in assisting your client achieve his or her objectives, you must gain a good understanding of the nature of the objectives, the kind of data that can be gathered to support the attainment of that objective, and the timeframe in which the objective must be achieved. There are a variety of ways in which you can gain this information:

- a. Ask direct questions to your client. Your client should be able to clearly state the objective. If not, you may be able to help the client clarify the objective and determine whether the objective is feasible.
- b. Ask for background information that will help you understand the nature of the work to be done. The client may provide this information verbally and in writing, including published articles or other forms of documentation. The Internet also may be a good and readily available source of information. Gaining a deeper level of background knowledge will help you ask the right questions as you work on meeting the client’s needs.
- c. Clarify with the client what will represent “success.”



## Deadlines: Can You Meet Them?

Ask the client what deadlines must be met. Make sure you clearly identify the “must have” critical deadlines from the “nice to have” non-critical deadlines. If you determine you will not be able to make a critical deadline, say so and give the reasons why. In some cases, the client may be able to find a way for you to achieve the deadline. For example, if the client is your supervisor and you are working on another task for the client or the organization that would prevent you from achieving the deadline, the client may be able to change the priority of your current work or provide additional resources that would enable you to achieve that task and meet the critical deadline.

If you are certain you will not be able to meet critical deadlines, letting the client know up front will enable the client to either modify the deadlines (if possible) or find another person who can meet the deadlines. If you want to have future involvement with a client, don’t accept an assignment you know in advance you will not be able to fulfill.

## Data, Analyses, and Reporting

To achieve the client’s objective, you will almost certainly be working with data and summarizing it in a manner that helps to achieve the client’s objective. You need to find out what data already exist that are

relevant to the objective, how you can gain access to that data, and what data may need to be collected prospectively. For example, the client may have a goal of increasing the output of a production line. Historical data exist that can be used to characterize the production line output, and the objective is to make improvements that increase output by 25% or more. Prospective data will clearly need to be collected to determine whether the objective is achieved.

As you contemplate what statistical methods you will choose to use to analyze and present data, find out what methods are commonly used in the context in which you will be working, and are thus familiar to your client. Methods familiar to the client are more readily accepted and require less effort to “sell.” If you think a less “conventional” approach to data analysis and presentation would be superior, discuss it with your client. Novel approaches can sometimes be so readily understood and obviously superior that the client will be quite pleased with your recommendation.

### Communication with the Client

An open line of communication with the client needs to be established up front. Ask the client what communication methods will enable you to contact him or her when needed (e.g., office or mobile

phone, email, text messages). People differ in their use of communication methods, and it is important to know which methods a client does and does not use and how frequently they look at email or the recent calls on their phones. An email message that is not viewed for a week may represent inadequate communication. Don’t assume the client will use the same methods you prefer.

Scheduling a regular meeting to discuss progress and any issues that need resolving or that the client should be aware of is a good idea. Determine a schedule that works for both you and the client and make sure both of you put that schedule on your calendars.

Be sensitive to your client’s style of communication. Some clients will want brief, to-the-point communications. Others will be more relaxed and enjoy talking about topics unrelated to the work objective. In the latter case, you may occasionally need to bring the conversation back on track to optimize the use of your time.

Finally, working with clients can be a very enjoyable experience. You can meet some nice and interesting people, some of whom may become your friends; you will gain a better appreciation of how statistics can be of value and you will almost always learn something new. ■



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# ASA Sections: Past, Present, and Future

Nicholas Beyler, John Czajka, Katherine Halvorsen, Eileen King, and John McKenzie

Part of “celebrating our past, energizing our future” is recognizing the importance of ASA sections in the life and growth of our association. Sections provide vital connections for our members, and they reflect the role of the ASA as “the Big Tent for Statistics.” Two months out from the start of our 175th anniversary year, we look at the past, present, and future of sections and encourage everyone to join in.

The development of inferential statistical techniques and their applications led in the 1920s and 1930s to the formation of several ASA subject-matter committees, the precursor of sections. Under the leadership of George Snedecor and others, one of those committees, Biometrics, became the ASA’s first section in 1938, nearly 100 years after the founding of the ASA. The Section on Statistical Training was founded nine years later and became the Section on Statistics Education in 1974 at the instigation of Bob Hogg. In the early 1950s, three more sections—Business and Economic Statistics, Social Statistics, and Physical and Engineering Sciences—were added. The next section, Statistical Computing, did not appear until 1972 and was followed, six years later, by Survey Research Methods. Two more sections—Biopharmaceutical and Statistical Graphics—were founded over the next seven years. Section formation accelerated after that, with 11 sections being added between 1988 and 1994. Seven more have been added since, including five in the past five years, bringing us to a total of 27 sections. More than half of these have been established since the 150th anniversary of the ASA

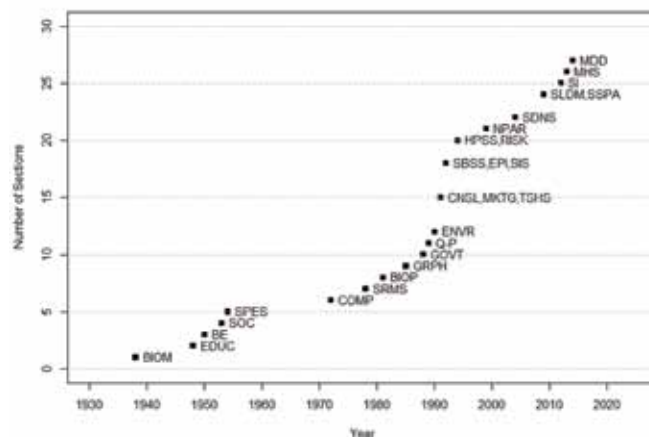
in 1989. ASA members continue to create new ways to connect and collaborate with statistical colleagues with similar interests.

In his 2012 presidential address, Bob Rodriguez characterized the ASA as the “Big Tent for Statistics.” He said “the ASA must attract all kinds of statisticians; serve their professional development needs; and promote their societal contributions to the public, the media, and policymakers.” In fact, each of the past four ASA presidents has noted the far-reaching influence of statistics and the increasing demand for statisticians.

The growth in demand for statistical expertise will bring increased demand for even more ASA sections in new areas of statistics not supported by the current sections. We anticipate the number of sections will increase rapidly in the next decade. How we deal with this growth will require a new way of thinking about the purpose, structure, and function of ASA sections.

Now is the time for all section members to consider the following: How should the structure of ASA sections evolve to ensure they meet the needs of section members? Should we have a few consolidated groups of sections, such as education, sciences, and social sciences? Should we return to a structure that includes specialized subsections within existing sections? Where do interest groups fit into this structure? How should we use technology to facilitate more frequent communication within and between sections?

To remain a vital organization, innovation will be required as we strive to attract new ASA members who want to develop highly collaborative relationships with others who share their passion.



The growth of ASA Sections



If you are not yet a member of a section, you are missing out. Each section provides a wide range of services to their members through webinars, workshops, short courses, conference seminars, mixers, awards, research funding opportunities, and resources for job searching, to name just a few. Did you know statistical programmers and analysts have an active blog that gets posts on a regular basis and that the consulting section deals with topics ranging from how to address particular data analysis problems to the value of PSTAT accreditation for consultants? This, and other noteworthy information, can be found at each section’s website through [www.amstat.org/sections/sectionlist.cfm](http://www.amstat.org/sections/sectionlist.cfm).

Want to join? It is easy to do from the ASA home page. Want to get involved? Contact Rick Peterson at [rick@amstat.org](mailto:rick@amstat.org). ■

## MASTER'S NOTEBOOK

# Developing Successful Career Relationships: Leveraging Mentoring, Coaching, and Sponsorship

Sarah Kalicin



**D**o you love your job? Do you feel you are as successful as you would like to be? Do you feel as if you are being held back because you are lacking some type of skill set or knowledge others have?

We all have times in our career when we face barriers or enter unknown territory that leaves us insecure in ourselves, feeling unsure about how to proceed or helpless because we don't see other options. It could be outgrowing a position and not knowing what to do next, not knowing how to handle different situations (e.g., dealing with difficult people or team dynamics, changes in business situations, taking on a new management or leadership position, etc.), or feeling overwhelmed with the demands of both work and home.

This is very true for statisticians. We are usually expected to understand other disciplines, then help foster the understanding of statistics within others who prefer to run and hide when the "S" word is brought up, all while taking leadership roles across multidisciplinary teams with competing agendas. For many of us, it is a shock that being a successful statistician goes way beyond the technical skill set we learn in graduate school. It is easy to get lost in this mangled web of emotions and expectations we face in our jobs, careers, and life. As we progress through our careers, we learn we must step up and acquire other skills and knowledge on the job to be

successful. What are these skills and knowledge? Do I need to go back to school? How do I get beyond these job/career obstacles, then demonstrate I have these skills? This is where mentoring, coaching, and sponsorship become essential career-leveraging tools.

We all hear that we need a mentor, someone who will provide us with the direction and guidance we need—that this is the key to our success. Just how do I get this All Mighty One, the Holy Grail of my career, that every successful statistician has, you may ask? You don't! It is a myth that you can find one person who can provide all the knowledge and guidance you need and facilitate the steps in your career. In fact, having *only* a mentor falls short of the relationships you need to succeed. The *Harvard Business Review* article, "Why Men Still Get More Promotions Than Women" (<http://hbr.org/2010/09/why-men-still-get-more-promotions-than-women>), illustrates there is more to career growth than being mentored. The article provides evidence that men are more likely to be sponsored, while women are overly mentored, leading to the promotion imbalance.

From my experience, mentoring, coaching, and sponsorship are all equally important, but they are completely different relationships that everyone needs to leverage. It all depends on your needs at any given time. As they say, what has brought you to this point will not get you to where you want to go. You need to understand what new skills, experiences, and perspectives you need to gain to move upward on the career ladder. Also, what has brought someone to where *they* are will be completely different from what you need to do. Everyone has their own unique strengths and opportunities. Basically, success is individual, along with its journey. So how do we leverage these relationships?

## Mentoring

Mentoring is for skill development, expanding your knowledge base, or gaining awareness. Mentors are people possessing skills or knowledge in other technical fields or business or who have organizational awareness that can help you build this knowledge base. Anyone can be a mentor to you (even younger individuals) if they have information that can help

you do better in your job, provide awareness, or increase knowledge. Mentoring examples include the following:

My background is solely statistics, with no computer engineering experience. Because I work at a semi-conductor company, understanding computer architecture helps me have more productive working discussions, perform better as a statistician, and engender mutual respect with my fellow engineering colleagues. I have sought hardware engineering mentors to gain this understanding.

I was managing a team of engineers and having an issue with a key team member who was not contributing in a positive manner. I sought out a mentor (a previous manager to this team member) to gain some insight as to why this person was acting that way and how I could motivate this person to contribute. This enabled me to figure out how to get the member better involved in the team's final decision.

## Coaching

Coaching is about people development. A coach will guide you in changing your behavior or building necessary skills to achieve greater performance and efficiency. While awareness of these skills is essential, a coach provides practice and offers feedback to allow you to hone these skills over time. You may seek a coach to close performance gaps, gain better interpersonal and communication skills, or develop stronger management/leadership abilities. Coaching examples include the following:

A few years ago, I was struggling to find myself in my career. I did not like the organization I was working in and the position did not challenge me. After trying to find other positions using the same strategies I had used in the past to no avail, I sought a career coach to guide me out of this desperate situation. With her help, I discovered what my strengths were, the types of positions I would fit best in, and how to “sell myself” in these areas. I altered my strategy in the way I saw myself, boosted my self-esteem, and provided a clearer focus for my career, which ultimately led me to my current position that I really love.

There have been times in my career when I had to work with someone who was difficult and made my job trying, if not impossible. When I realized I did not have the skills to effectively handle the situation, I sought a coach to build my interpersonal communication skills. My coach provided constructive feedback on how I

had handled the situation and offered new techniques for best communicating with difficult people. The relationship changed from confrontational to effective and productive.

## Sponsorship

Sponsorship opens doors for you to experience new opportunities, which you would likely not otherwise be able to do on your own. A sponsor is your advocate when you wish to gain more exposure in a company or organization, provide stretch roles, obtain more experience, increase key contacts, or move up in an organization. Sponsors are key senior people who enable you to have the opportunities to demonstrate these skills. Sponsorship examples include the following:

When I was looking for new opportunities within my company, I would conduct informational interviews with people who had interesting positions. Within these discussions, I asked if they would introduce me to more senior individuals who might be able to provide further contacts in the areas where my quantitative skills would make a useful contribution. These introductions led me to engage with very senior individuals and provided a better overall perspective of the company and business that I would not normally have received. They also served to open doors that would otherwise have remained closed to me.

When I finally found a potential opportunity outside my organization, I needed to have a few senior managers aligned to enable the new role. I approached a senior manager who understood the challenges I was having within the organization. He discussed the merits of the role—and my position in it as a suitable candidate—with other key managers to develop and realize the role. He essentially proved to be my key advocate and proponent in circumstances in which I did not have the specific influence to make it happen myself.

As can be seen from my experiences, mentoring, coaching, and sponsorship are different types of career relationships. When used effectively, they can propel you ahead in your career. Remember that as your career evolves, these relationships should also evolve to foster new necessary knowledge and skills. This means you need to be proactive in identifying what new knowledge and skills should be gained and seek the right relationships to help acquire them. In my new position, I am now re-evaluating my development needs and assembling my new relationships to allow me to take the relevant next steps in my career. ■

# Webinar Series Planned to Help Update Guidelines for Undergraduate Statistics Programs

The American Statistical Association endorses the value of undergraduate programs in statistical science, both for statistical science majors and students in other majors seeking a minor or concentration. Guidelines for such programs were endorsed in 2000, and a new workgroup is updating them.

To help gather input and identify issues and areas for discussion, the workgroup has organized a series of webinars to focus on different issues. These are free to attend and will be made available after the event. More information about the existing curriculum guidelines and a survey can be found at [www.amstat.org/education/curriculumguidelines.cfm](http://www.amstat.org/education/curriculumguidelines.cfm).

We hope you can participate in some or all of the following webinars. These will be recorded and made available for review after the session at the guidelines webpage.

## Observations from Large Programs

Recorded and online at [www.amstat.org/education/curriculumguidelines.cfm](http://www.amstat.org/education/curriculumguidelines.cfm)

Different institutions implement statistics programs in different ways. In this webinar, we will hear from representatives from four large undergraduate

statistics programs and discuss the existing guidelines and issues that should be addressed in the future.

## Connection with Community Colleges

Recorded and online at [www.amstat.org/education/curriculumguidelines.cfm](http://www.amstat.org/education/curriculumguidelines.cfm)

Community colleges serve a key role in the U.S. higher education system, accounting for approximately 40% of all enrollments. In this webinar, representatives from community colleges and universities with many community college transfers will discuss the interface between the systems and ways to prepare students for undergraduate degrees and minors in statistics.

## Building Toward Big Data and Data Science

November 18, 6:00 p.m. – 6:45 p.m. Eastern Time

Undergraduate statistics majors and minors will be entering an increasingly data-centric world upon graduation. What new skills and capacities will they need to succeed in this environment? How do we train the current generation of faculty to be able to teach them? In this webinar, data scientists and faculty will work to enunciate key aspects that need to be included in our programs.

## The Role and Variety of Undergraduate Statistics Capstones

December 4, 5:00 p.m. – 5:45 p.m. Eastern Time

The undergraduate capstone experience brings reflection and focus, as well as integration of material studied, within a major. Capstones require the disciplined use of skills, methodology and knowledge taught throughout their courses, experiential, and co-curricular activities. In this webinar, several models for undergraduate capstones will be discussed, as well as key themes that pervade them all.

To be added to a low-volume, moderated mailing list for announcements related to the revision of the undergraduate guidelines, contact Rebecca Nichols at [rebecca@amstat.org](mailto:rebecca@amstat.org). More information about the workgroup and the process can be sent to the chair, Nicholas Horton, at [nhorton@amherst.edu](mailto:nhorton@amherst.edu). ■

## Second Biennial Electronic Conference on Teaching Statistics

The Electronic Conference on Teaching Statistics (eCOTS) will take place May 12–16, 2014. This virtual conference will be hosted by the Consortium for the Advancement of Undergraduate Statistics Education (CAUSE).

Just like the United States Conference on Teaching Statistics (USCOTS), eCOTS was designed to focus on undergraduate-level statistics education (including AP Statistics), with a target audience of statistics teachers. Whereas USCOTS is held in odd-numbered years, eCOTS occurs during even-numbered years and seeks to provide a virtual meeting space for educators to share ideas, teaching methods, and research results.



# Professional Development Opportunities at JMM 2014

Registration continues for two pre-conference workshops offered by the Consortium for the Advancement of Undergraduate Statistics Education (CAUSE) on January 14, 2014, the day before the opening of the MAA-AMS Joint Mathematics Meetings (JMM) at the Baltimore, Maryland, Marriott Inner Harbor. This is the seventh consecutive offering of pre-conference workshops at JMM by CAUSE. If you are attending the Joint Math Meetings, consider arriving a day early to take advantage of these no-cost professional development opportunities. Advance registration is required, as space is limited.


**Teaching the Statistical Investigation Process with Randomization-Based Inference**, a full-day workshop (9:00 a.m. – 4:30 p.m.), is intended for faculty members who have experience with or soon will be teaching introductory statistics. The workshop will provide direct experience with hands-on activities designed to introduce students to fundamental concepts of inference using randomization-based methods. The learning activities involve using freely available applets to explore concepts and analyze real data from genuine research studies.

**Interactive Probability Instruction**, an afternoon workshop (1:30 p.m. – 4:30 p.m.), will introduce participants to novel



web-based technologies for blended teaching of computational statistics and applied probability theory. The topics and techniques are suitable for introductory and cross-listed applied probability and statistical methods courses. The workshop is designed to be accessible to those with little or no computational background and will provide you with skills, examples, and resources you can use in your own teaching.

Both workshops are supported by NSF funding, CAUSE, and MAA. Additional information and registration are available at [www.causeweb.org/workshop](http://www.causeweb.org/workshop). ■




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**Bovas Abraham** was awarded honorary membership in the Statistical Society of Canada (SSC) this past May, during the society's annual meeting in Edmonton, Alberta, Canada. Abraham was recognized for his exceptional contributions to the development of statistical sciences in Canada and internationally. The citation for the honorary membership award reads:

To Bovas Abraham, for his fundamental contributions to the statistical sciences, advances in time series analysis, statistical methods for quality improvement, and industrial statistics; for dissemination of statistical methodology through authorship of textbooks; and for his service as founding president of the Business and Industrial Statistics Section and president of the Statistical Society of Canada.

Abraham is professor emeritus in the department of statistics and actuarial science at the University of Waterloo. He has devoted his talent and energy to the statistical sciences in many capacities. He is a former president of the SSC and the founding president of the Business and Industrial Statistics Section of the SSC, as well as the founding president of the International Society for Business and Industrial Statistics.

He is co-author of *Statistical Methods for Forecasting and Introduction to Regression Modeling* and is a fellow of the American Society for Quality, American Statistical Association, and Royal Statistical Society. He is an elected member of the International Statistical Institute. He also has been awarded the International Statistical Institute's Service Award and the American Society for Quality's William G. Hunter award. ■

ASA member and University of Michigan statistics professor **Susan Murphy** was named a MacArthur Foundation fellow September 24. She was honored for her work developing new methodologies to evaluate courses of treatment for individuals coping with chronic or relapsing disorders, such as depression or substance abuse. Murphy's Sequential Multiple Assignment Randomized Trial (SMART) is a means for learning how best to dynamically adapt treatment to an individual's response over time. "By translating statistical theory into powerful tools for evaluating and tailoring complex medical therapies, Murphy is poised to have a significant impact on the field of personalized medicine, an area of great activity in biomedical research today," the foundation wrote. Read more and watch an interview with Murphy at [www.macfound.org/fellows/89](http://www.macfound.org/fellows/89). ■

ASA member and Columbia University statistics professor **David Madigan** was named executive vice president and dean of the Faculty of Arts and Sciences by university President Lee C. Bollinger. Madigan has been the interim dean since March. He joined Columbia's faculty in 2007 as a professor of statistics and became the department chair the following year.

"In his important new leadership role, David will be called on to sustain and further strengthen Columbia's academic excellence, expand our interdisciplinary programs, and make this core academic community of arts and sciences even more diverse," Bollinger said.

Madigan said fostering a more diverse faculty is one of his key objectives, along with supporting the highest quality teaching and learning. "As interim executive vice president I have experienced first hand the extraordinary quality and

brilliance of the faculty and students here at Columbia and the attendant responsibility we have to do good in the world," he said. "I am excited and humbled to take on this role."

Born in Ireland, Madigan earned his bachelor's degree in mathematical sciences and a PhD in statistics from Trinity College, Dublin. He is a Fellow of the American Statistical Association, the Institute of Mathematical Statistics, and the American Association for the Advancement of Science. ■

Read about your colleagues and friends in the news. Go to [www.amstat.org](http://www.amstat.org) and click on "Statisticians in the News."

## Obituary

### Steven T. Carrier

Longtime ASA member Steven T. Carrier passed away on August 20, 2013, at Midwest Palliative and Hospice Care Center in Glenview, Illinois.

Born in 1938 in Havre, Montana, Carrier served in the United States Army Reserves during high school. Five days after graduating, he joined and served in the United States Marines for three years. He then completed a four-year apprenticeship, receiving a Journeyman Electronics Mechanic Certificate from the Naval Weapons Center, China Lake, California.

During the Cuban Missile Crisis, he volunteered in the United States Air Force Reserves for one year.

In 1967, he earned a Bachelor's of Science in applied mathematics from California State Polytechnic University and later a PhD in statistics from Texas A&M University.

Carrier's career was spent in the pharmaceutical biostatistics and drug development industry, and he retired from Abbott Laboratories.

To read more about Carrier's life, visit [www.strangefuneral.org](http://www.strangefuneral.org).

# Waller Education Awards

June Morita, Brad Hartlaub, and Nick Horton, Waller Education Awards Committee

Thanks to the generosity of Ray and Carolyn Waller, there are now *two* Waller awards to recognize outstanding statistical educators:

**The Waller Education Award** honors individuals early in their careers (10 or fewer years of full-time teaching) who teach the first course in statistics in a college or university. Graduate teaching assistants also are eligible.

**The Waller Distinguished Teaching Career Award** honors individuals with 20 or more years of statistics teaching experience.

The Waller Education Committee is accepting applications for both awards.

## Waller Education Award

Key criteria for the Waller Education Award include a commitment to teaching elementary statistics and demonstrated innovation in the instruction. Broader impact of the nominee on statistical education beyond the nominee's institution is also an important criterion.

## Waller Distinguished Teaching Career Award

Key criteria for this award include excellence in teaching across a variety of statistics courses; innovation, scholarship, and creative efforts in education; and impact on statistics education beyond the nominee's institution.

## Nominations Guidelines

Nominators are encouraged to be as specific as possible and convincingly attest to the influence and effect of the nominee's work

in statistical education and teaching. Nominations are submitted as a packet, with up to four letters of support from students, colleagues, and supervisors, along with the nominee's curriculum vita and a nomination letter of no more than four pages that address the selection criteria.

Nominations must be received by March 15, 2014.

## Awards History

The award committee consists of six members, each of whom has an active interest in the teaching and learning of statistics. The committee helps encourage a large and diverse pool of nominations so to ensure the award selection process recognizes the achievements of a diverse group reflecting the breadth of the ASA membership and the profession. Once the nominations are complete, each committee member ranks them individually, before the committee as a whole creates a short list. For more information, see the guidelines for ASA awards committees on avoiding implicit bias at [www.amstat.org/awards/acguidelines.cfm](http://www.amstat.org/awards/acguidelines.cfm).

Beth Chance was the inaugural winner of the Waller Education Award, with John Holcomb, Ginger Holmes Rowell, Roger Woodard, Joy Jordan, Jo Hardin, Steve Wang, Nicholas Horton, Amy Froelich, Michelle Everson, and Michael Posner previous recipients. Nathan Tintle was selected as the winner for 2013. His longstanding and deep commitment to teaching elementary statistics at Hope College and, more recently, Dordt has led to the growth of both programs.

In addition, his scholarship and related research in statistical education has had demonstrated important nationally. Tintle received his award during the JSM 2013 awards ceremony.

JSM 2014 will mark the first time the Distinguished Teaching Career Award will be given.

Ray Waller is a former executive director of the ASA. In 2002, he and his wife, Carolyn, made a generous contribution to the ASA to establish the first award. This past summer, they once again made a significant contribution that allowed the ASA to launch the new award. ■

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

[www.amstat.org/awards](http://www.amstat.org/awards)

<b>December 15, 2013</b> COPSS Fisher Lectureship and Award	<a href="http://niss.org/copss">niss.org/copss</a>
<b>December 15, 2013</b> ASA Noether Senior and Young Scholar Awards	Nominations: Pam Craven, <a href="mailto:pamela@amstat.org">pamela@amstat.org</a> Questions: Dennis Boos, <a href="mailto:boos@stat.ncsu.edu">boos@stat.ncsu.edu</a>
<b>March 1, 2014</b> ASA Fellows	Nominations accepted online at <a href="http://www.amstat.org">www.amstat.org</a> beginning October 1, 2013 Questions: Katherine L. Monti, <a href="mailto:kmonti@rhoworld.com">kmonti@rhoworld.com</a>
<b>March 31, 2014</b> ASA Statistics in Chemistry Award	Philip J. Ramsey, <a href="mailto:pjrstats@aol.com">pjrstats@aol.com</a>
<b>March 15, 2014</b> ASA W. J. Dixon Award for Excellence in Statistical Consulting	Nominations: Pam Craven, <a href="mailto:pamela@amstat.org">pamela@amstat.org</a> Questions: Lloyd J. Edwards, <a href="mailto:lloyd_edwards@unc.edu">lloyd_edwards@unc.edu</a>
<b>March 15, 2014</b> ASA Founders Award	Nominations: Pam Craven, <a href="mailto:pamela@amstat.org">pamela@amstat.org</a> Questions: Marie Davidian, <a href="mailto:davidian@ncsu.edu">davidian@ncsu.edu</a>
<b>March 15, 2014</b> ASA W. J. Youden Award in Interlaboratory Testing	Nominations: Pam Craven, <a href="mailto:pamela@amstat.org">pamela@amstat.org</a> Questions: Michael J. Messner, <a href="mailto:messner.michael@epa.gov">messner.michael@epa.gov</a>
<b>March 15, 2014</b> ASA Waller Distinguished Teaching Career Award	Nominations: Pam Craven, <a href="mailto:pamela@amstat.org">pamela@amstat.org</a> Questions: Bradley A. Hartlaub, <a href="mailto:hartlaub@kenyon.edu">hartlaub@kenyon.edu</a>
<b>March 15, 2014</b> ASA Waller Education Award	Nominations: Pam Craven, <a href="mailto:pamela@amstat.org">pamela@amstat.org</a> Questions: Bradley A. Hartlaub, <a href="mailto:hartlaub@kenyon.edu">hartlaub@kenyon.edu</a>
<b>March 15, 2014</b> Karl E. Peace Award for Outstanding Statistical Contributions for the Betterment of Society	Nominations: Pam Craven, <a href="mailto:pamela@amstat.org">pamela@amstat.org</a> Questions: G. David Williamson, <a href="mailto:dwx2@cdc.gov">dwx2@cdc.gov</a>
<b>April 1, 2014</b> ASA Gertrude M. Cox Scholarship	Applications & Questions: Pam Craven, <a href="mailto:pamela@amstat.org">pamela@amstat.org</a>
<b>April 1, 2014</b> ASA Outstanding Statistical Application Award	Nominations: Pam Craven, <a href="mailto:pamela@amstat.org">pamela@amstat.org</a> Questions: DuBois Bowman, <a href="mailto:dbowma3@emory.edu">dbowma3@emory.edu</a>
<b>April 1, 2014</b> ASA Edward C. Bryant Scholarship	Applications: Pam Craven, <a href="mailto:pamela@amstat.org">pamela@amstat.org</a> Questions: Tapabrata Maiti, <a href="mailto:maiti@stt.msu.edu">maiti@stt.msu.edu</a>
<b>April 1, 2014</b> ASA Excellence in Statistical Reporting Award	Nominations: Pam Craven, <a href="mailto:pamela@amstat.org">pamela@amstat.org</a> Questions: Morteza Marzjarani, <a href="mailto:mortkm2@yahoo.com">mortkm2@yahoo.com</a>
<b>April 1, 2014</b> ASA Samuel S. Wilks Memorial Medal	Nominations: Pam Craven, <a href="mailto:pamela@amstat.org">pamela@amstat.org</a> Questions: Lynne Billard, <a href="mailto:lynne@stat.uga.edu">lynne@stat.uga.edu</a>

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# sectionnews

## Biometrics

The ASA's Biometrics Section is accepting applications for the 2014 David P. Byar Young Investigator Award. This annual award is given to a young investigator for best emerging work to be presented at JSM. The award commemorates the late David Byar, a biostatistician who made significant contributions to the development and application of statistical methods and was esteemed as an exceptional mentor during his career at the National Cancer Institute. The winner will receive a \$2,000 award.

In addition to the Byar Award, the section may provide travel awards to the authors of other outstanding papers submitted to the competition. The travel award will be \$1,000.

Applicants must meet the following criteria:

- Have held a doctorate in statistics, biostatistics, or a related quantitative field for three or fewer years as of April 1 of the current year, or be currently enrolled as a student in a doctoral program in statistics or biostatistics and in active pursuit of a doctoral degree.
- Be a current member of the Biometrics Section (applicant may join at the time of submission for a \$5 annual membership fee [\$3 for students]). Please note that membership in the ASA does not automatically confer section membership; ASA members must join individual sections in addition to their generic membership.
- Be first author of the paper. The paper may be unsubmitted, submitted, or under review, but may not have appeared in a journal either online or in print at the time of the application or have been accepted for publication as of December 1.
- Be scheduled to present the same paper submitted at the 2014 Joint Statistical Meetings in Boston, Massachusetts, as either a talk or poster.
- Not have submitted the paper to other ASA section 2014 student/young investigator award competitions.

Applicants must submit their JSM abstracts to the Biometrics Section, which will organize a series of topic-contributed sessions to highlight the Byar

award and travel awards winners. Applicants must submit the following materials by December 1:

- A cover letter certifying that the applicant meets the eligibility requirements and has not submitted the paper to more than one other ASA section student/young investigator award competition
- A current CV
- One copy of the finished paper

All materials must be submitted electronically to Jianwen Cai at [cai@email.unc.edu](mailto:cai@email.unc.edu). Finalists will be announced by January 15, 2014. An electronic submission system is being developed, and the submission web address will be announced at [www.bio.ri.ccf.org/Biometrics](http://www.bio.ri.ccf.org/Biometrics).

In addition to the Byar award, the section invites applications for funding to support projects developing innovative outreach projects focused on enhancing awareness of biostatistics among quantitatively talented U.S. students. The section is particularly interested in projects that will encourage students to pursue advanced training in biostatistics. The section anticipates funding up to three projects, with total funding of up to \$5,000 per project. The project timelines would be from 1.5–2 years. All investigators are encouraged to apply. The deadline to send in an application is November 20.

For details, visit the section website at [www.bio.ri.ccf.org/Biometrics](http://www.bio.ri.ccf.org/Biometrics) or read the *Amstat News* section news page at <http://magazine.amstat.org/blog/category/membernews/amstatsections>.

## Physical and Engineering Sciences

*Michael Crotty, SAS Institute, SPES Awards Chair*

The Section on Physical and Engineering Sciences is pleased to announce the results of its annual competition for contributed papers presented at the 2013 Joint Statistical Meetings in Montréal, Québec, Canada.

Outstanding Presentation Award: **Thomas Santner**, The Ohio State University, for “Estimating Local Sensitivity Indices for Deterministic Computer Simulator Output with Rectangular and Non-Rectangular Input Regions.”

Runner-Up Outstanding Presentation Award: **Matthew Avery**, Institute for Defense Analyses, for “Experimental Design Challenges in Operational Testing: Recent Case Studies.”

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

Honorable Mention: **Seth Guikema**, The Johns Hopkins University, for “Statistical Forecasting of Hurricane Power Outages”

Honorable Mention: **Laura June Freeman**, Institute for Defense Analyses, for “Statistical Engineering Case Study: Revising Test Protocols for Combat Helmet Testing”

Honorable Mention: **Yevgeniya Pinelis**, CNA, for “A Proposal for an Experiment with Navy Enlistment Contract Lengths”

Honorable Mention: **Donald Gantz**, George Mason University, for the SPES-contributed paper “A Similarity Score for Fingerprint Images”

Honorable Mention: **Rebecca Dickinson**, Virginia Tech, for “Statistical Methods for Combining Information: Stryker Family of Vehicles Reliability Case Study”

All awards are based on audience evaluations of each speaker. Winners received a certificate recognizing their accomplishment and a cash award.

For details, visit the SPES webpage at <http://community.amstat.org/SPES/Home> or *Amstat News* online at <http://magazine.amstat.org/blog/category/membernews/amstatsections>.

## Quality and Productivity

The Quality and Productivity Section is accepting applications for ASA student travel awards to attend the Joint Statistical Meetings in Boston, Massachusetts, August 2–7, 2014. Up to three \$400 awards will be given.

To be eligible, you must be a graduate student enrolled in an applied statistics and/or quality management program.

Applications will be accepted February 1, 2014, through March 31, 2014. More information about the award and how to apply is posted at <http://community.amstat.org/QP/ScholarshipsAwards/JSMStudentTravelAwards>.

## Statistical Consulting

The executive committee of the Statistical Consulting Section congratulates the following section award winners:

Best Topic-Contributed Session (organizer): **Li Qin**, Senior Research Scientist, Amazon.com

Best Contributed Session (presenter): **Jason Parcon**, Principal Scientist, Statistics Group, PepsiCo Global R&D

Best Poster Session (presenter): **Andrew Hoegh**, Graduate Student, Virginia Tech

The winners were announced during JSM 2013 in Montréal.

## Statistics in Imaging

The Statistics in Imaging Section of the ASA announces its inaugural student paper competition. Students are encouraged to submit a paper related to statistical imaging analysis. The selected winners will present their papers in a special contributed session at the Joint Statistical Meetings, August 2–7, 2014, in Boston, Massachusetts, and receive a certificate. The first-place winner will receive a certificate and \$500.

To be eligible, students must be a degree candidate at an accredited institution during 2013 and the first author of the paper. An entry must include the following:

- A CV

- A brief abstract

- A manuscript with no more than 25 pages, including figures, tables, and references

- Blinded versions of the abstract and manuscript

- A letter from a faculty member familiar with the student’s work. The faculty letter must include a verification of the applicant’s student status and, in the case of joint authorship, should indicate the contribution of the applicant.

All application materials must be sent electronically in PDF format by 5:00 p.m. EST December 15 to Haipeng Shen at [shenhaipeng@gmail.com](mailto:shenhaipeng@gmail.com). All submissions must be written in English. The award committee will review the papers and make award announcements by the end of January 2014.

Students may submit papers to no more than two ASA sections and may accept only one section’s award. Students must inform both sections they applied to when he or she wins and accepts an award, thereby removing the student from the award competition for the second section. Additional information can be found at [www.amstat.org/sections/studentpaperawards.cfm](http://www.amstat.org/sections/studentpaperawards.cfm).

## California

■ Department of Statistics & Applied Probability, University of California, invites applications for a tenure-track assistant professor position in statistics, starting 7/1/2014. Qualifications: research/teaching excellence; PhD in statistics, biostatistics, or related fields. Candidates who can contribute to the diversity of excellence of the academic community through research, teaching, and service are particularly encouraged to apply. An AA/EEO. [www.pstat.ucsb.edu/employment.htm](http://www.pstat.ucsb.edu/employment.htm).

■ California State Polytechnic University, Pomona, Math & Statistics Department. Tenure-track position for assistant professor in statistics beginning 9/2014. Start-up funds, reduced teaching first two years. PhD in statistics or closely related field by 9/22/2014. Deadline: 12/13/2013. May review late applications until position filled/closed. Submit: cover letter, CV, teaching philosophy, research statement, undergrad and grad transcripts, 3 recent reference letters. [www.csupomona.edu/~math/position](http://www.csupomona.edu/~math/position). AA/EEO.

■ 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*. Visit [www.rand.org/statistics](http://www.rand.org/statistics). Applications received by December 15, 2013 will receive priority. Applications must be submitted online following the instructions at [www.rand.org/statistics/jobs.html](http://www.rand.org/statistics/jobs.html) (search PhD statistician). Send questions to [Susan\\_Paddock@rand.org](mailto:Susan_Paddock@rand.org). AA/EEO.

## Colorado

■ Open-rank special appointment faculty position, starting August 2014. Statistical consulting and collaborative research with faculty across the university, plus teaching applied courses at the graduate and undergraduate levels. PhD required; three subsequent years experience in applied statistics strongly preferred. Position is 9-month, non-tenure track and allows for renewable 3-year contracts. Full posting and online application at <http://bit.ly/19nyJhP>. Review begins 12/1/2013 and continues until filled. Colorado State University is an AA/EEO. Background checks on all final candidates are conducted.

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](http://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](http://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](mailto: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](http://www.amstat.org/jobweb).



### THE FLORIDA STATE UNIVERSITY DEPARTMENT OF STATISTICS

#### ASSISTANT PROFESSOR POSITION IN STATISTICS, BIOSTATISTICS, OR COMPUTATIONAL STATISTICS (TENURE-TRACK)

The Department of Statistics at Florida State University invites applications for a tenure-track position in statistics, biostatistics, or computational statistics starting August 2014. We have a growing teaching and research program with over 60 undergraduate majors and over 90 graduate students. We offer a B.S. degree in Statistics and M.S. and Ph.D. degrees in Statistics and Biostatistics. Candidates with interests in all areas of statistics and biostatistics are invited to apply. A PhD in Statistics, Biostatistics, or a related field is required. Candidates should have strong commitments to excellence in teaching and research.

Review of candidates will begin November 1, 2013 and continue until the positions are filled.

Applications are being accepted online. Please visit our web site at <http://stat.fsu.edu> to apply and for additional information about the Department of Statistics. The position will also be advertised at <http://jobs.fsu.edu>.

Florida State University is an Equal Opportunity/Access/Affirmative Action Employer. Women and minority candidates are particularly encouraged to apply.

## Georgia

■ Georgia State University mathematics and statistics department, located in Atlanta, GA, invites applications for an assistant professor position requiring a PhD in statistics or biostatistics. Submit applications to [www.mathjobs.org](http://www.mathjobs.org). An offer of employment will be conditional upon background verification. Georgia State University is a research university of the university system of Georgia and an EEO/AA institution.

## Idaho

■ Assistant professor of statistical science. Department of statistical science at University of Idaho invites applications for a tenure-track assistant professor (9-month) in computationally intensive statistical methods applied to systems biology, as defined by NIH: <http://l.usa.gov/1bFGvSr>. Application screening began 11/1/2013. Position starts 8/17/2014; AA/OE.

## Indiana

■ Department of Statistics, Indiana University, Bloomington, seeks assistant or associate professor. Require PhD in



### Faculty Position in Oncology Biostatistics & Bioinformatics, The Sidney Kimmel Comprehensive Cancer Center at Johns Hopkins

The Division of Biostatistics and Bioinformatics, Department of Oncology, Johns Hopkins School of Medicine and the Sidney Kimmel Comprehensive Cancer Center at Johns Hopkins is accepting applications for a tenure-track faculty biostatistician. We welcome applications from candidates at any academic rank. Suitable candidates will hold a Ph.D. in statistics, biostatistics, or related quantitative field, with interest and experience in clinical trials and translational research, primarily in cancer. Experience or interest in statistical issues relating to hematologic malignancies is especially desirable. Excellent verbal and written communication skills and ability to collaborate effectively with investigators in other disciplines are essential. (At this time we are not recruiting for individuals whose primary interest and experience is in Bioinformatics.) Please visit our website for more information about our group: [www.rits.onc.jhmi.edu/DBB/](http://www.rits.onc.jhmi.edu/DBB/)

Application Procedure: Applicants should send a letter of application, Curriculum Vitae (including personal website URL if available), and at least three letters of reference to the following address.

For electronic communication: [OncBioSearch@jhmi.edu](mailto:OncBioSearch@jhmi.edu)

For paper communication:  
Search Committee  
Division of Biostatistics and Bioinformatics  
550 North Broadway, Suite 1103  
Baltimore, MD, 21205-2013

Applications will be considered until January 15, 2014.

The Johns Hopkins University is an Equal Opportunity/Affirmative Action employer. We strongly encourage qualified women and under-represented minorities to apply.



### HARVARD UNIVERSITY DEPARTMENT OF STATISTICS

The Department of Statistics at Harvard University invites applications for two open-rank, open-field positions for the 2014-15 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/4940>. 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/4939>

Submission of an application by December 1, 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.





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://www.chicagobooth.edu/faculty/openings>. We will start formally reviewing applications on December 1, 2013 and strongly encourage you to complete your application by then. We will continue to accept applications until March 15, 2014.

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

statistics or related field, active research program, commitment to teaching. All areas considered; special consideration to high-dimensional and/or massive data analysis, machine learning, spatial, computational, Bayesian. Apply <http://bit.ly/18ZMe3a>. Include cover letter, CV, research/teaching statements, 3 recommendation letters. Application by Nov. 15 ensures consideration. Search continues until position filled. Questions: [dalittle@indiana.edu](mailto:dalittle@indiana.edu). AA/EOE.

### Iowa

■ Tenure-track assistant professor of actuarial science starting 8/14. Required: PhD as of 8/20/14; strong research, teaching potential; interest in research collaboration. Preferred: a fellowship or association in a professional actuarial society; industrial experience. Details at [www.stat.uiowa.edu](http://www.stat.uiowa.edu). Selection begins 12/31/13. Submit application online at <http://jobs.uiowa.edu> (Req. #63222). AA/EOE.

■ Grinnell College. Tenure-track position in statistics. Assistant professor (PhD) in statistics or related discipline preferred; instructor (ABD) or associate professor possible. Teaching schedule is five courses

over two semesters. Candidates with experience with data-driven courses, courses with hands-on projects, or undergraduate research projects will receive strong consideration. For complete description and application instructions, go to <https://jobs.grinnell.edu>. Deadline for full consideration: Nov. 15, 2013. AA/EOE.

### Kentucky

■ The department of mathematics and statistics at Northern Kentucky University invites applications for a tenure-track position in statistics at the assistant professor level, to begin Aug. 2014. Position will, in part, support a new undergraduate degree program in data science that focuses on Big Data—data mining, modeling, simulation, analytics, data visualization, and machine learning. Details at [jobs.nku.edu/postings/310](http://jobs.nku.edu/postings/310). EOE.

■ University of Kentucky, assistant professor, tenure-track, biostatistics (public health), beginning 08/14. Potential for demonstrated excellence in methodological and collaborative research and in teaching public health professional students and biostatistics students. Selection begins 1/15/14 and continues until filled. CV, three reference letters to Richard Kryscio,

## Faculty Positions – School of Operations Research & Information Engineering (ORIE)

*Cornell is a community of scholars, known for intellectual rigor and engaged in deep and broad research, teaching tomorrow's thought leaders to think otherwise, care for others, and create and disseminate knowledge with a public purpose.*

Cornell University's School of Operations Research and Information Engineering (ORIE) seeks to fill up to two tenured/tenure-track faculty positions for its Ithaca campus. Applicants with research interests in all areas of operations research and information engineering will be considered, but applicants in areas aligned with the School's current strategic plan will receive primary consideration: the plan seeks to strengthen the School's leading role in advancing the analytical, methodological, and modeling tools of operations research together with the potential of "Big Data" and the information revolution.

Requisite is a strong interest in the broad mission of the School, exceptional potential for leadership in research and education, an ability and willingness to teach at all levels of the program, and a PhD in operations research, mathematics, statistics, or a related field by the start of the appointment. Salary will be appropriate to qualifications and engineering school norms.

Cornell ORIE is a diverse group of high-quality researchers and educators interested in probability, optimization, statistics, simulation, and a wide array of applications such as manufacturing, e-commerce, supply chains, scheduling, transportation systems, health care, financial engineering, service systems and network science. We value mathematical and technical depth and innovation, and experience with applications and practice. Ideal candidates will have correspondingly broad training and interests.

Please apply online at <https://academicjobsonline.org/ajo/jobs/3039> with a cover letter, CV, statements of teaching and research interests, sample publications, list of reference letter writers and, for junior applicants, a doctoral transcript. Applications will be reviewed starting on October 1, 2013 (prior to the annual INFORMS conference); although all applications completed by November 15, 2013, will receive full consideration, candidates are urged to submit all required material as soon as possible. Applications will be accepted until the positions are filled.

ORIE and the College of Engineering at Cornell embrace diversity and seek candidates who can contribute to a welcoming climate for students of all races and genders. Cornell University seeks to meet the needs of dual career couples, has a Dual Career program, and is a member of the Upstate New York Higher Education Recruitment Consortium to assist with dual career searches. Visit <http://www.unyherc.org/home/> to see positions available in higher education in the upstate New York area. Cornell University is an equal opportunity, affirmative action educator and employer. We strongly encourage qualified women and minority candidates to apply.

Find us online at <http://hr.cornell.edu/jobs> or [Facebook.com/CornellCareers](https://www.facebook.com/CornellCareers)

*Cornell University is an innovative Ivy League university and a great place to work. Our inclusive community of scholars, students and staff impart an uncommon sense of larger purpose and contribute creative ideas to further the university's mission of teaching, discovery and engagement. Located in Ithaca, NY, Cornell's far-flung global presence includes the medical college's campuses on the Upper East Side of Manhattan and in Doha, Qatar, as well as the new CornellNYC Tech campus to be built on Roosevelt Island in the heart of New York City.*



*Diversity and inclusion have been and continue to be a part of our heritage. Cornell University is a recognized EEO/AA employer and educator.*

230 Sanders-Brown Center on Aging,  
800 South Limestone St., University of  
Kentucky, Lexington, KY 40536-0236.  
AA/EOE.

### Massachusetts

■ Boston University mathematics and statistics invites applications for tenure-track statistics assistant professor. PhD required. Begins fall 2014, subject to final budgetary approval. Commitment to research and teaching both undergraduate and graduate level essential. Submit cover letter, CV, research statement, teaching statement, and four recommendation letters (one teaching): Statistics Search, Mathematics and Statistics, Boston University, 111 Cummington Mall, Boston, MA 02215. Alternatively, visit [mathjobs.org](http://mathjobs.org). Deadline 12/15/13. AA/EOE.

### Michigan

■ Arbor Research Collaborative for Health seeks an experienced research analyst II knowledgeable in biostatistics and/or epidemiology to participate in



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](http://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.*

Dare to be first.



### UNIVERSITY OF DELAWARE SEEKS THREE FULL-TIME TENURE POSITIONS TO HELP SHAPE FUTURE OF STATISTICS PROGRAM

An innovative leader in research and teaching, the University of Delaware combines a rich historic legacy with a commitment to undergraduate education and the creation of new impactful knowledge. With external funding exceeding \$200 million, the University ranks among the top 100 universities in federal R&D support for science and engineering. Supported by state-of-the-art facilities, research is conducted across all seven colleges and numerous interdisciplinary institutes and centers. The main campus in Newark, Delaware, provides the amenities of a vibrant college town with convenient access to the major cities of the East Coast.

UD is home to the prestigious College of Agriculture and Natural Resources, whose interdisciplinary Department of Applied Economics and Statistics is now hiring three full-time, tenure-track faculty positions who will shape the future direction of its Statistics Program beginning in summer 2014. Successful candidates will demonstrate the drive and vision to develop an innovative, cutting-edge, and internationally recognized research program in statistics, as well as collaborate with researchers on campus, in government, and in industry. **We are seeking individuals who dare to be first and will be the thought leaders of their disciplines.**

These three positions are at the rank of Assistant Professor, with the possibility of one position being hired at the Associate Professor level. They are nine-month, academic-year appointments. Visit <http://ag.udel.edu/apec/> for more information about the positions and the department.

**RESPONSIBILITIES:** Preference will be given to applicants who can cooperate in the Department's existing quantitative research programs in applied economics and statistics. Each professor will teach both undergraduate and graduate students in statistics. In addition, there is the expectation to contribute to Department/University service activities and its mission of statistical literacy on campus.

**REQUIREMENTS:** Ph.D. in Statistics (or related fields) with research emphasis in one or more of the following areas: Data Analytics, Economics (or other social science fields), Bioinformatics, Biostatistics (or related health science fields), and Statistical Theory. Successful candidates will have a proven track record of excellence in research and a demonstrated interest in high quality teaching at both the graduate and undergraduate levels. Deadline for applications is November 15, 2013, or until the position is filled.

University of Delaware salaries and fringe benefit packages are highly competitive. Those interested should apply online at [www.udel.edu/udjobs/](http://www.udel.edu/udjobs/) and should carefully read the "Applicant Instructions" under the "Resources for Applicants" tab before submitting their application. Please upload only your resume (curriculum vitae) to this website. In addition, application materials, including a curriculum vitae, one research paper and three letters of recommendation must be submitted online at [www.econjobmarket.org](http://www.econjobmarket.org).

[www.udel.edu/udjobs](http://www.udel.edu/udjobs)

## University of Massachusetts Amherst

The Department of Mathematics and Statistics <http://www.math.umass.edu> invites applications for three three-year Visiting Assistant Professor/Lecturer positions (non-tenure track) to start September 1, 2014. Candidates should have completed the Ph.D. by the beginning of the appointment. Exceptional promise in research and a commitment to outstanding teaching at all levels of the curriculum are expected. The search will encompass the following areas: Algebra and Number Theory, Algebraic Geometry, Analysis and Partial Differential Equations, Applied and Computational Mathematics, Differential Geometry and Topology, Mathematical Physics, Probability, Representation Theory and Lie Theory, and Statistics. Applications should be submitted electronically through the AMS website <http://www.mathjobs.org>. Alternatively, applicants may send a curriculum vitae and research and teaching statements, and arrange to have four letters of recommendation, one of which must address the candidate's teaching, sent to:

VAP Search Committee, Department of Mathematics and Statistics, Lederle Graduate Research Center, 710 North Pleasant St., Amherst, MA 01003-9305.

Review of applications will begin January 6, 2014. Applications will continue to be accepted until all positions are filled.

The University provides an intellectual environment committed to providing academic excellence and diversity including mentoring programs for faculty. The College and Department are committed to increasing the diversity of the faculty, student body, and the curriculum. The University of Massachusetts is an Affirmative Action/Equal Opportunity employer. Women and minorities are encouraged to apply.

statistical analysis to coordinate research development and successfully accomplish a wide variety of analytical requests. More information about this opportunity and the benefit program at Arbor Research is available on the careers page at [www.ArborResearch.org](http://www.ArborResearch.org). Arbor Research Collaborative for Health is an AA/EOE.

### Missouri

■ University of Missouri, Department of Statistics, seeking two assistant teaching professors winter 2014 and fall 2014. A PhD in statistics or related field by employment date and excellence in teaching and communication skills required. Position is structured 80% teaching (4 courses a semester or equivalent) and 20% service. Deadline is Dec. 15, 2013. Apply online at <http://bit.ly/15N721d>. CV and transcripts. Three reference letters to [Umcstatfacsearch@missouri.edu](mailto:Umcstatfacsearch@missouri.edu). University of Missouri is an AA/EOE.

■ Departments statistics and biological sciences, University of Missouri, seek joint mid-level tenured position in stochastic modeling who uses Bayesian approaches to model biological problems, establish

## Faculty Position in Bioinformatics, The Sidney Kimmel Comprehensive Cancer Center at Johns Hopkins

The Division of Biostatistics and Bioinformatics, Department of Oncology, Johns Hopkins School of Medicine and the Sidney Kimmel Comprehensive Cancer Center at Johns Hopkins (SKCCC) is seeking a faculty member whose research interests include bioinformatics. The opening is at the rank of associate professor or above, depending on the applicant's qualifications. The successful applicant will carry out independent research, mentor junior faculty members, and collaborate with SKCCC investigators. Also, as Director of the SKCCC Bioinformatics Shared Resource, this individual will work with the Division Director and have responsibility for assuring appropriate statistical and bioinformatics infrastructure and staffing for SKCCC, including ongoing development of facilities for bioinformatics data storage and analysis. Suitable candidates will hold a Ph.D. in statistics, biostatistics, or related quantitative field, with interest and experience in bioinformatics, informatics, modeling biological processes, or systems biology. Prior cancer research experience, expertise in bioinformatics IT systems, and relevant administrative experience are desirable. Excellent verbal and written communication skills and ability to collaborate effectively with collaborators in other disciplines are essential.

The Division of Biostatistics and Bioinformatics, founded in 1988, is a leader in statistical applications in cancer research. We conduct methodologic research in biostatistics and bioinformatics to advance cancer research, provide biostatistics and bioinformatics support to medical investigators in cancer and other conditions, and teach research methodology in a wide variety of academic programs in the Johns Hopkins Schools of Public Health and Medicine. The Division, currently with 12 doctoral-level and 8 masters-level biostatisticians or bioinformaticians, has strong research and teaching connections with many groups throughout Johns Hopkins University conducting quantitative research in cancer, especially the Department of Biostatistics in the Bloomberg School of Public Health, as well as ties with the Center for Computational Biology and the Center for Computational Genomics. Please visit our website: [www.rits.onc.jhmi.edu/DBB/](http://www.rits.onc.jhmi.edu/DBB/)

Application Procedure: Applicants should send a letter of application, Curriculum Vitae (including personal website URL if available), research statement, and at least three letters of reference to the following address.

For electronic communication: [OncBioSearch@jhmi.edu](mailto:OncBioSearch@jhmi.edu)

For paper communication:  
Search Committee  
Division of Biostatistics and Bioinformatics  
550 North Broadway, Suite 1103  
Baltimore, MD, 21205-2013

Applications will be considered until December 1, 2013.

The Johns Hopkins University is an Equal Opportunity/Affirmative Action employer. We strongly encourage qualified women and under-represented minorities to apply.

research program that complements each department's strengths and networks with College of Agriculture, Food, and Natural Resources. Required: statistics or biostatistics PhD. Apply at <http://bit.ly/15N721d>. Cover letter, vita, research and teaching statements, and 3 references. Deadline: Dec. 15, 2013. AA/EOE.

### New York

■ Memorial Sloan-Kettering Cancer Center is seeking a doctoral-level biostatistician with an interest in collaborative research in important problems in cancer research to join an existing group of 35 biostatisticians (19 faculty and 16 research staff; [www.mskcc.org/biostat](http://www.mskcc.org/biostat)). Send CV and contact information for three referees to Alexia Iasonos at [wongk1@mskcc.org](mailto:wongk1@mskcc.org). EOE.

### North Carolina

■ The department of statistics at NC State University seeks to hire a tenure-track assistant professor with theoretical or methodological research focus in any area of statistics, although complemen-

tary interests in computation and Big Data applications will be viewed favorably. A PhD in statistics or biostatistics is required. Apply at <https://jobs.ncsu.edu/postings/28537>. Review begins in Dec. and continues until the position is filled. NCSU is an EOE. Persons with disabilities requiring accommodations call (919) 515-3148.

### Ohio

■ The Ohio State University Department of Statistics searches for two tenure-track assistant professors beginning autumn 2014. For one position, applicants should have expertise in statistics and machine learning. For the second, applicants should have expertise in statistical modeling in high dimensions. PhD in statistics (or related area) by August 20, 2014, is expected. Applicants apply electronically at [www.academicjobsonline.org](http://www.academicjobsonline.org). Review process will begin on Nov. 1, 2013. The Ohio State University is an 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](http://www.stat.cmu.edu) (email: [hiring@stat.cmu.edu](mailto:hiring@stat.cmu.edu)). Send CV, research papers, relevant transcripts, and three recommendation letters to: Faculty Search Committee, Statistics, Carnegie Mellon University, Pittsburgh, PA 15213. Application screening begins immediately, continues until positions closed. AA/EOE.

■ The Wharton Department of Statistics, University of Pennsylvania, is seeking full-time, tenure-track faculty at any level—assistant, associate, or full professor—beginning July 2014. Applicants should show outstanding capacity in research and teaching. Applicants must have a PhD (expected completion by June 30, 2015, is acceptable) from an accredited institution. Please visit our website to apply: <http://bit.ly/1gbuC9X>. Questions to [statistics.recruit@wharton.upenn.edu](mailto:statistics.recruit@wharton.upenn.edu). AA/EOE.



## DEPARTMENT OF BIostatISTICS

The Department of Biostatistics at the Johns Hopkins Bloomberg School of Public Health is seeking an outstanding applicant to join our tenure track faculty. Rank of appointment will be commensurate with experience and new PhDs and recent postdoctoral fellows are encouraged to apply. Candidates should have a PhD or equivalent in statistics, biostatistics, or a comparable data science field. In 2013-14 the Department particularly seeks new faculty members who are committed to education and engage in cutting edge research to advance statistical and quantitative inference, methods and discovery for the population health, clinical and social health sciences. Women and under-represented minority candidates are particularly encouraged to apply.

The Hopkins Department of Biostatistics, founded in 1918, was the first degree-granting department of statistical science in the US and has ranked among the best throughout its history. The Johns Hopkins Health Institutions (Schools of Public Health, Medicine, and Nursing, and the Johns Hopkins Hospital) are among the top worldwide and provide a research environment in which energetic faculty can promulgate scientific excellence. Today, the Department comprises 21 tenure track faculty members, 19 research track faculty members, 10 postdoctoral fellows, 47 PhD students, 16 full-time master degree students, and 13 students pursuing joint master degrees together with doctorates in other departments.

### TO APPLY

Email cover letter, CV, contact information for three references, a statement of research interests and goals, and two manuscripts or articles representing your most important work to: Faculty Search Committee at [biostat@jhsph.edu](mailto:biostat@jhsph.edu).

The Johns Hopkins University is an affirmative action/equal opportunity employer.



## Department of Statistics

The Department of Statistics, Virginia Tech, (see [www.stat.vt.edu](http://www.stat.vt.edu)) anticipates a tenure-track position with an emphasis on spatial-temporal statistics, environmental statistics and related fields. The starting date is August, 2014. Appointments at the assistant professor level are preferred, but exceptional senior candidates will be considered. Applicants must have earned a doctorate in statistics, biostatistics, or closely related field at the time of appointment.

Questions can be directed to Professor Jeffrey B. Birch, Search Chair, Department of Statistics, Virginia Tech, Blacksburg, VA 24061-0439, Tel: (540) 231-7034, Email: [jbbirch@vt.edu](mailto:jbbirch@vt.edu). Applications must be submitted online at <https://listings.jobs.vt.edu/postings/42606> (posting #TR0130079). The application package should include a cover letter, curriculum vitae, a research plan and a statement of teaching philosophy. Applicants should arrange for three letters of recommendation to be submitted directly to the Search Chair. Review of applications will begin on December 1, 2013 and continue until the position is filled.

Virginia Tech is an EO/AA university, and offers a wide range of networking and development opportunities to women and minorities in science and engineering. Individuals with disabilities desiring accommodations in the application process should notify Ms. Betty Higginbotham ([higgvt@vt.edu](mailto:higgvt@vt.edu)), Statistics Department, (540) 231-5657, or call TTY 1-800-828-1120.

## Texas

■ Sam Houston State University Dept. of Mathematics and Statistics invites applications for a tenure-track asst. professor position in statistics beginning fall 2014. Requirements: PhD in statistics, excellent communications skills, strong commitment to quality teaching, scholarly and research activities, and service. Review begins Nov. 2013. Applicants must submit a cover letter, CV, teaching statement, research statement, and three letters of reference online at <http://bit.ly/19ZQJd4>. AA/EOE.

■ Essilor of America, Inc. has an opening in Dallas, TX, for Sr. manager-analytics to manage complex statistical projects, analytics budget & perform adv. statistical analysis, market modeling & market response models for Sr. mgmt. Requires master's+5 yrs exp. in analyzing market/competitive trends & 5% domestic & intl travel. Email résumés to [essilorusrecruiting@yahoo.com](mailto:essilorusrecruiting@yahoo.com) & refer to Job #EOA18. EOE.



## Faculty Position in Oncology Biostatistics & Bioinformatics, The Sidney Kimmel Comprehensive Cancer Center at Johns Hopkins

The Division of Biostatistics and Bioinformatics, Department of Oncology, Johns Hopkins School of Medicine and the Sidney Kimmel Comprehensive Cancer Center at Johns Hopkins (SKCCC) is seeking a faculty member whose research interests include bioinformatics. The opening is at the rank of associate professor or above, depending on the applicant's qualifications. The successful applicant will carry out independent research, mentor junior faculty members, and collaborate with SKCCC investigators. Also, as Director of the SKCCC Bioinformatics Shared Resource, this individual will work with the Division Director and have responsibility for assuring appropriate statistical and bioinformatics infrastructure and staffing for SKCCC, including ongoing development of facilities for bioinformatics data storage and analysis. Suitable candidates will hold a Ph.D. in statistics, biostatistics, or related quantitative field, with interest and experience in bioinformatics, informatics, modeling biological processes, or systems biology. Prior cancer research experience, expertise in bioinformatics IT systems, and relevant administrative experience are desirable. Excellent verbal and written communication skills and ability to collaborate effectively with collaborators in other disciplines are essential.

The Division of Biostatistics and Bioinformatics, founded in 1988, is a leader in statistical applications in cancer research. We conduct methodologic research in biostatistics and bioinformatics to advance cancer research, provide biostatistics and bioinformatics support to medical investigators in cancer and other conditions, and teach research methodology in a wide variety of academic programs in the Johns Hopkins Schools of Public Health and Medicine. The Division, currently with 12 doctoral-level and 8 masters-level biostatisticians or bioinformaticians, has strong research and teaching connections with many groups throughout Johns Hopkins University conducting quantitative research in cancer, especially the Department of Biostatistics in the Bloomberg School of Public Health, as well as ties with the Center for Computational Biology and the Center for Computational Genomics. Please visit our website: [www.rits.onc.jhmi.edu/DBB/](http://www.rits.onc.jhmi.edu/DBB/)

Application Procedure: Applicants should send a letter of application, Curriculum Vitae (including personal website URL if available), research statement, and at least three letters of reference to the following address.

For electronic communication: [OncBioSearch@jhmi.edu](mailto:OncBioSearch@jhmi.edu)

For paper communication:  
Search Committee  
Division of Biostatistics and Bioinformatics  
550 North Broadway, Suite 1103  
Baltimore, MD, 21205-2013

Applications will be considered until December 1, 2013.

The Johns Hopkins University is an Equal Opportunity/Affirmative Action employer. We strongly encourage qualified women and under-represented minorities to apply. George Mason University is an equal opportunity employer encouraging diversity.

## 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 for all positions must be completed through the website [www.mathjobs.org/jobs/Utah](http://www.mathjobs.org/jobs/Utah), and will be accepted until the position(s) have been filled. All applications will be reviewed when they are complete. EOE/AA.

## Virginia

■ Virginia Tech's Department of Statistics ([www.stat.vt.edu](http://www.stat.vt.edu)) has a tenure-track opening to support its computational modeling and data analytics program ([www.science.vt.edu/lais/cmda](http://www.science.vt.edu/lais/cmda)). Required are a PhD in statistics or related field and research focus in data analytics, machine learning, stochastic modeling, or related computationally intensive statistical methods. Further information is available at the links above. Applications must be submitted online at [listings.jobs.vt.edu](http://listings.jobs.vt.edu) (posting #TR0130073). AA/EOE. Individuals with disabilities

### Academia Sinica

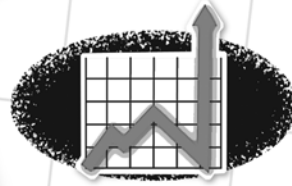
#### Institute of Statistical Science Regular Research Positions

The Institute of Statistical Science, Academia Sinica, is seeking candidates for regular research positions at the level of assistant, associate or full research fellow available in 2014. Candidates in all areas of Statistics will be considered. Candidates should have a PhD degree 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 degree recipients may also be included. Except for the letters of recommendation, electronic submissions are encouraged. Applications should be submitted to

Dr. Hsin-Chou Yang  
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: [hsinchou@stat.sinica.edu.tw](mailto:hsinchou@stat.sinica.edu.tw)

Applications should be received by  
**December 31, 2013** for consideration.

# Strength in Numbers



Join the 300+ strong and diverse community of Census Bureau mathematical statisticians at the heart of the Statistical quality of our demographic and economic census, surveys, and research.

## 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](http://www.census.gov), click on Jobs@census, Headquarters and NPC Employment Opportunities, Mathematical Statistician

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Economics and Statistics Administration,  
U.S. Census Bureau

## 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

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/careers](http://www.westat.com/careers).



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Research Corporation\*

desiring accommodation notify Mikhelle Taylor, College of Science, (540) 231-5422, or TTY (800) 828-1120.

■ Department of Mathematics, College of William and Mary, seeks applications for a tenure-track position at the assistant professor level in biomathematics or biostatistics. Exceptional applicants at the associate/full professor levels and other areas of applied mathematics also will be considered. Applicants must hold a PhD in mathematics or a related field by 8/24/2014. Please go to <http://bit.ly/16KmGv3> for full description. College is an AA/EO employer.

■ The department of statistics at the University of Virginia invites applications for two tenure-track positions, one assistant professor and one assistant or associate professor, beginning in fall 2014. A PhD in statistics or related field is required. See the department website at [www.stat.virginia.edu](http://www.stat.virginia.edu) for complete application information. AA/EOE.

## Faculty Positions

### INSTITUTE FOR ADVANCED COMPUTATIONAL SCIENCE

**Stony Brook University is one of America's most dynamic public universities, a center of academic excellence and a leader in health education, patient care and research.** Listed among the top 1 percent of all universities in the world by the *Times Higher Education World University Rankings*, Stony Brook is home to more than 24,100 undergraduate, graduate and doctoral students and more than 14,000 faculty and staff, including those employed at Stony Brook Medicine, Long Island's premier academic medical center and teaching hospital. With 603 beds, Stony Brook University Hospital is the region's only tertiary care center and Regional Trauma Center. The University is a member of the prestigious Association of American Universities and co-manager of nearby Brookhaven National Laboratory.

Applications are invited for four tenure-track faculty positions in applied mathematics and computer science in the Institute for Advanced Computational Science (IACS) at Stony Brook University – two at the assistant professor level and two at the full professor level with named chairs and significant individual endowments within the institute. Candidates wishing to apply should have a doctoral degree in Computer Science or Applied Mathematics, though a degree in related fields may be considered. Ten years of faculty or professional experience is required for the two senior positions along with a demonstrated record of publications and research funding. A demonstrated record of publications and a demonstrated potential for research funding is required for the junior faculty position. The selected candidate is expected to participate in interdisciplinary program development within the Institute and to establish a research program with a solid funding base through both internal and external collaborations. Of specific interest is research in, for example, programming models, algorithms or numerical representations that advance scientific productivity or broaden the benefit and impact of high-performance computing. The selected candidates will have access to world-class facilities including those at nearby Brookhaven National Laboratory.

The Institute for Advanced Computational Science ([iacs.stonybrook.edu](http://iacs.stonybrook.edu)) was established in 2012 with an endowment of \$20 Million, including \$10 Million from the Simons Foundation. The current eight faculty members will double in number over the next few years to span all aspects of computation with the intent of creating a vibrant multi-disciplinary program. IACS seeks to make sustained advances in the fundamental techniques of computation and in high-impact applications including engineering and the physical, life and social sciences. Our integrated, multidisciplinary team of faculty, students and staff overcome the limitations at the very core of how we compute, collectively take on challenges of otherwise overwhelming complexity and scale, and individually and jointly define new frontiers and opportunities for discovery through computation. In coordination with the Center for Scientific Computing at Brookhaven National Laboratory, our dynamic and diverse institute serves as an ideal training and proving ground for new generations of students and researchers, and provides computational leadership and resources across the SBU campus and state of New York.

The search will remain open until suitable candidates are found. Optimal start date is Fall 2014. All candidates must submit the required documentation online through the link provided below. Please input a cover letter, copy of your curriculum vitae, research plan (max. two pages), publication list, funding history, one-page statement of your teaching philosophy and three reference letters to <https://academicjobsonline.org/ajob/jobs/3072>.

**Alternatively, applicants may submit a cover letter, résumé/CV, research plan (max. two pages), publication list, funding history, one-page statement of teaching philosophy and three reference letters to:**

Search Chair, Institute for Advanced Computational Science  
Heavy Engineering, Suite 230  
Stony Brook University, Stony Brook, NY 11794-5250

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Stony Brook  
University

*Division of Biostatistics*  
*School of Public Health - University of Minnesota*

**ASSISTANT/ASSOCIATE/FULL PROFESSOR OF BIOSTATISTICS**

The Division of Biostatistics, School of Public Health, at the University of Minnesota is announcing openings for two tenured or tenure-track faculty positions at the Assistant, Associate, or Full Professor rank.

We are especially interested in individuals with academic and research records in (1) the development of innovative approaches, methods, and software for the manipulation and analysis of “big data” in the biomedical sciences, (2) methods for survey sampling small area estimation, or (3) structural equation modeling (SEM), causal analysis, and other methods useful for accounting for latent factors in observational data. We will however consider applications from candidates in other important related research areas, as well as those with PhDs in areas besides biostatistics or statistics.

The Division has significant strengths in the broad areas targeted by this search. Current research in statistical methodology includes causal modeling, adaptive clinical trials, statistical genetics and bioinformatics including genomics and proteomics, analysis of spatial and longitudinal data, medical imaging methods, Bayesian methods, computer-intensive methods such as Markov chain Monte Carlo, survival analysis, and statistical data mining. Our faculty’s methods grants complement our large, more collaborative research projects with investigators in the University’s Academic Health Center.

At the present time, the Division has statistical and data coordinating centers for NIH-funded clinical trials networks in HIV/AIDS, other infectious disease, and in lung and cardiovascular disease. The Division also collaborates actively on research in cancer prevention and treatment, dentistry and periodontology, psychiatry/psychology, environmental and occupational health, health policy, chronic and neurodegenerative diseases, and smoking prevention. Multi-year grants and contracts for various Divisional projects total over \$53 M.

Applications received before **November 15, 2013** will be given first consideration for an interview. However we will continue to accept applications until the positions are filled.

The Division of Biostatistics ([www.sph.umn.edu/biostatistics](http://www.sph.umn.edu/biostatistics)) currently includes 33 graduate faculty and 65 staff. The Division offers MS, MPH, and PhD degrees as well as a Certificate in Applied Biostatistics, and interacts in teaching, advising and research with the University of Minnesota School of Statistics.

A successful candidate will also be responsible for teaching and advising students at the graduate level. At the present time, the Division has 72 graduate students (39 MS and 33 PhD). The salary range for these faculty positions will be very competitive, and the University of Minnesota offers excellent fringe benefits.

Applicants should submit a cover letter, current curriculum vitae, and the names of at least three references online at <http://employment.umn.edu/applicants/Central?quickFind=113880>. Please reference requisition # 186416. In addition, a letter of recommendation from each of the three references should be sent to: Biostatistics Search Committee, Division of Biostatistics, A460 Mayo Building, MMC 303, 420 Delaware Street SE, Minneapolis, MN 55455. For questions contact Megan Schlick ([megana@biostat.umn.edu](mailto:megana@biostat.umn.edu)).

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## Wisconsin

■ The departments of biostatistics and medical informatics and population health sciences at the University of Wisconsin (Madison) School of Medicine and Public Health seek applicants for a joint faculty position at the (tenure-track) assistant or (tenured) associate rank. PhD in statistics, biostatistics, or related field and expertise in clinical investigation, epidemiologic studies, or health services research is required. Additional information found at: <http://bit.ly/1bxj6pF>. AA/EOE.

■ Department of biostatistics and medical informatics at the University of Wisconsin School of Medicine & Public Health and Morgridge Institute for Research seek assistant (tenure-track) or associate/full (tenured) professor in biostatistics or bioinformatics. Innovative position combines research in methodology with applications in virology; includes teaching, graduate student training. PhD in biostatistics, statistics, bioinformatics, computational biology, biomedical informatics, computer sciences, or related area. Please see <http://bit.ly/17CxlW5>. AA/EOE.

## International

■ The National Academy of Sciences seeks a scientist to fill a biostatistics position at the Radiation Effects Research Foundation (RERF) in Hiroshima, Japan. The primary responsibilities of this position are statistical consulting on the design of radiation research protocols and analysis of research data in consultation with RERF epidemiologists, clinical researchers, and laboratory scientists, w/additional independent research on related statistical methodologies and applications. <http://bit.ly/1777wsZ>. EOE, M/F/D/V.

■ Applications are invited for a teaching-track faculty position at Carnegie Mellon Qatar in Education City, Doha. This position emphasizes undergraduate teaching primarily, but also involves a combination of course development and/or research. All areas of statistics are welcome. See [www.stat.cmu.edu](http://www.stat.cmu.edu) (email: [hireing@stat.cmu.edu](mailto:hireing@stat.cmu.edu)). Send CV, relevant transcripts, teaching statement, and three recommendation letters to: Search Committee, Statistics, Carnegie Mellon University, Pittsburgh, PA 15213. AA/EOE. ■

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The Department of Biostatistics at the University of North Carolina at Chapel Hill seeks to fill one post-doctoral position on its training grant in genomics and cancer. The department has exciting research programs in a number of areas of statistical genomics, including RNA-sequence analysis, genome-wide association studies, and studies of copy number variation, imaging genetics, and strong collaborations with the Lineberger Comprehensive Cancer Center. We are seeking to fill the position by February 1, 2014. The post-doctoral trainee must be a permanent resident or citizen of the U.S. The typical post-doctoral trainee will have completed highly relevant doctoral training in statistics, biostatistics, or related quantitative disciplines. Strong programming skills and knowledge of high-throughput sequencing data is highly desirable. Prior expertise in genomic analysis is preferred but not required.

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 Department of Biostatistics  
 School of Public Health  
 CB #7420  
 University of North Carolina at Chapel Hill  
 Chapel Hill, NC 27599-7420  
 E-mail: [ibrahim@bios.unc.edu](mailto:ibrahim@bios.unc.edu)

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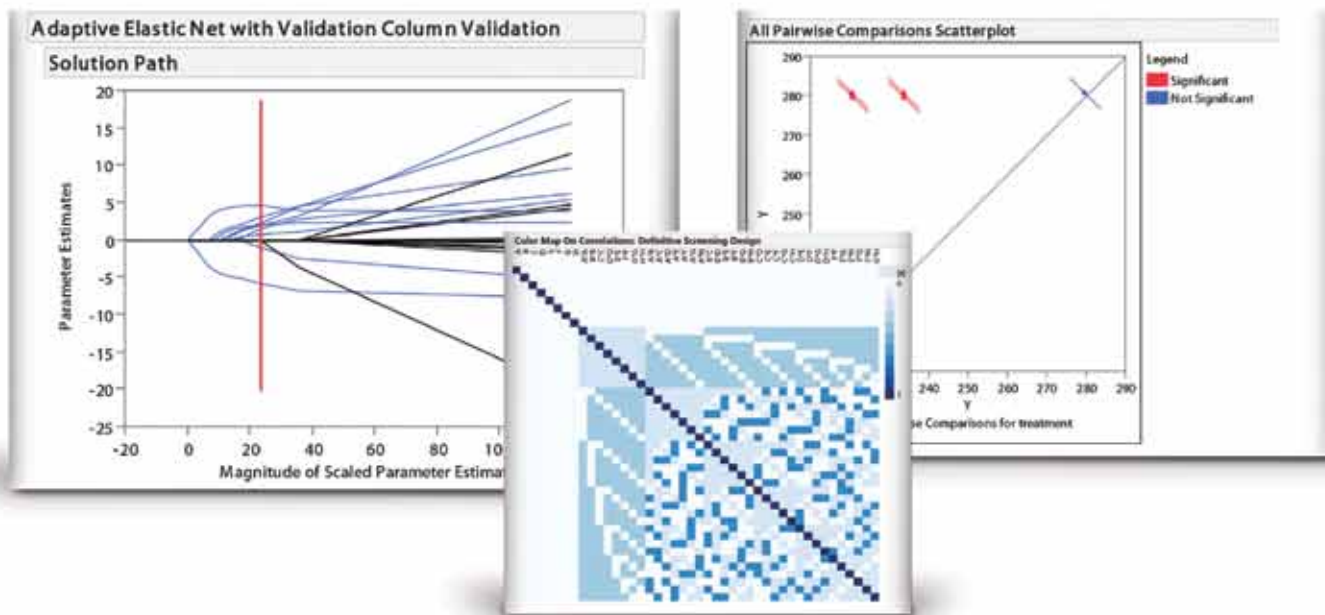
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