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AMSTATNEWS

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

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



Price

Contributing Editors

Dionne Price is a mathematical statistician and team leader at the U.S. Food and Drug Administration. She served as the 2010 program chair for the Biopharmaceutical Section and is the section's current secretary.



Herring

Amy Herring is professor of biostatistics at The University of North Carolina at Chapel Hill and past president of ENAR. She earned her doctorate in biostatistics from Harvard University and is a Fellow of the ASA.

19 MASTER'S NOTEBOOK If I Were Starting Over ...

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.



Morris

Contributing Editor

Richard Morris is a statistician at SRA International, Inc., with more than 30 years of experience in statistical consulting. He earned a BS in zoology from San Diego State University and an MS from North Carolina State University. After working for 15 years in a CRO environment, he earned a PhD in biomathematics from North Carolina State University.

Online Articles

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

Statistics Without Borders (SWB) is planning an active role at this year's Joint Statistical Meetings, sponsoring, co-sponsoring, or hosting more than 30 sessions and events. The outreach group encourages those interested in learning about upcoming volunteer opportunities and projects to visit their booth in the exhibit hall. To read about some of the sessions and events SWB is sponsoring, see <http://magazine.amstat.org/blog/2013/07/01/swb-at-jsm>.

The fifth edition of **Principles and Practices for a Federal Statistical Agency from the National Research Council's Committee on National Statistics (CNSTAT)** was publicly released May 8. The report stresses the importance of producing transparent data, independent from political and other undue external influence, and making these data easily accessible. For a link to the full text of the fifth edition, which is available for download in PDF, visit www.nap.edu/catalog.php?record_id=18318. To read more, visit <http://magazine.amstat.org/blog/2013/07/01/principles-and-practices>.

To celebrate the International Year of Statistics, the statistics department and center for statistical analysis at **Temple University** hosted a one-day conference on April 12. About 120 scientists attended, and junior researchers and graduate students participated in the poster sessions. View the website at www.fox.temple.edu/cms_academics/dept/statistics for the conference program, abstracts, and pictures. Details of the event are also available at <http://magazine.amstat.org>.

Villanova University announces the creation of the new center for statistics education in the college of liberal arts and sciences. Anyone interested in participating or offering suggestions about how we could serve the Philadelphia community contact Michael Posner at michael.posner@villanova.edu or visit the website at www1.villanova.edu/villanova/artsci/mathematics/cse.html. Details are also online at <http://magazine.amstat.org>.

Do you want to polish your presentation skills and better influence your company's decisionmakers or your clients? The **ASA's Career Success Factors** initiative is sponsoring a half-day course, Effective Presentations for Statisticians, in Montréal during JSM. To register for the course, visit the website at www.amstat.org/careers/csf/courses.cfm.

columns

20 **STATtr@k** **Becoming an Environmental Statistician**

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.



Waller

Contributing Editor

Lance Waller is the Rollins Professor and Chair of the department of biostatistics and bioinformatics at Emory University's Rollins School of Public Health. Before coming to Emory, he was an associate professor of biostatistics at the University of Minnesota and University of Alabama at Birmingham.

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Aren't We Data Science?

Last month, I shared this column with President-elect Nat Schenker and Past President Bob Rodriguez to announce an ASA strategic initiative to promote engagement of statisticians in Big Data (<http://magazine.amstat.org/blog/2013/06/01/the-asa-and-big-data>). I'm following that announcement with an account of some of my recent experiences regarding data science, which inspire my enthusiasm for this effort. One in particular serves as a metaphor for the disconnect between statistics and data science we noted last month.

Around the time we were finalizing that column, Michelle Dunn, chair of the ASA Committee on Funded Research, forwarded an email to me. Michelle thought I would be interested in learning from the press release in the email that Eric Green would be speaking in Chapel Hill, North Carolina, 25 minutes from my office in Raleigh, on April 23. In January, the director of the National Institutes of Health (NIH), Francis Collins, announced the creation of a new NIH-wide position, the Associate Director for Data Science (ADDS), to "capitalize on the exponential growth of biomedical research data" (www.nih.gov/news/health/jan2013/od-10a.htm). Collins named Green, current director of the National Human Genome Research Institute, as acting ADDS. Green is also co-chair of the search committee charged with nominating the permanent ADDS (www.jobs.nih.gov/vacancies/executive/adds.htm).

Indeed, I was very interested! But what was even more interesting was the organization that had invited Green to speak. The press release announced "a new collaboration called the National Consortium

for Data Science (NCDS) (aiming) to make North Carolina a national hub for data-intensive business and data science research." It went on to note that the NCDS had been launched at the Renaissance Computing Institute at The University of North Carolina at Chapel Hill (UNC-CH) and included among its founding members businesses, government organizations, and **major research universities**.

I highlight that last group because, upon locating the NCDS website (<http://data2discovery.org>), I was astonished to review the list of founding members and see that not only is my university (North Carolina State) a founding member, but so are Duke University and UNC-CH. Along with SAS Institute; Research Triangle Institute International; NIH's National Institute for Environmental Health Sciences; IBM; and several other institutions, businesses, and government agencies that employ numerous statisticians. The member representatives listed on the website from NC State, Duke, and UNC-CH are computer scientists/engineers, and among all 17 representatives, there is not one statistician.

Until I saw that email, I had no idea that the NCDS even existed. A quick check with my department head, others in my department, and statistician friends at the other institutions listed (including Bob at SAS) revealed that none of them did, either. I later learned that, of the 80 or so individuals participating in the invitation-only NCDS Leadership Summit on "Data to Discovery: Genomes to Health" for which Green was the keynote public speaker, only two are affiliated with an entity with the word "statistics" in its name (and are known to me to be trained as statisticians).



Marie Davidian



Rachel Schutt's Introduction to Data Science class in the Columbia University Statistics Department, where she is adjunct assistant professor. She is also senior research scientist at Johnson Research Labs.

I tell this story not to take issue with the formation of the NCDS, but because it is reminiscent of stories and comments I have heard from many of you.

As we discussed in June, the field of data science has commanded considerable attention in the media and among business and science leaders. It is described as a blend of computer science, mathematics, data visualization, machine learning, distributed data management—and statistics. A *New York Times* article in April reported that centers and institutes devoted to data science and Big Data are being created and curricula and certificate and degree programs are being developed at a number of universities (<http://nyti.ms/14X4l6h>).

Many of you have expressed concern that these and other data-oriented initiatives have been or are being conceived on your campuses without involvement of or input from the department of statistics or similar unit. I've been told of university administrators who have stated their perceptions that statistics is relevant only to “small data” and “traditional” “tools” for their analysis, while data science is focused on Big Data, Big Questions, and innovative

new methods. I've also heard about presentations on data science efforts by campus and agency leaders in which the word “statistics” was not mentioned. On the flip side, I have heard from statistics faculty frustrated at the failure of their departments to engage proactively in such efforts.

In fact, some of you have asked directly the question that comprises the title of this column.

I decided to contact a statistician who is at the forefront of data science to get her thoughts about the challenges (and opportunities) these developments pose for our discipline and how we might confront them. Rachel Schutt, who is featured in the *Times* article cited above, earned her PhD from the department of statistics at Columbia University, where she is an adjunct faculty member (<http://columbiadatascience.com>). Upon graduation, Rachel took a position at Google, where she became acquainted with the scope, practice, and jargon of data science before moving to her current position at Johnson Research Labs (www.jrl-labs.com/about). In fall 2012, she taught “Introduction to Data Science” (<http://columbiadatascience.com/about-the-class/about-the-course>) for the Columbia statistics department and is co-author of a book, *Doing Data Science*, summarizing the course (<http://shop.oreilly.com/product/0636920028529.do>). I encourage you to visit the course website and read Rachel's blog about the evolving course activities.

Rachel generously spent well over an hour sharing her perspectives with me; I summarize our discussion of only a few key topics here.

Data science is here to stay, Rachel says. There may be a lot of “hype,” but that might not be bad if it attracts talented people to work on data-driven problems. And to statistics. Statistics has enormous potential to contribute to data science. There are open research problems requiring that classical statistical methods in sampling, design, and causal inference be “scaled up” to be feasible with massive data sets. Few of the computer scientists and others who dominate the data science landscape are well-versed in these concepts, and many take an “algorithmic” view of data analysis. Data science needs statistical thinking and new foundational frameworks—for example, what is the “population” when one confronts the Big Data generated by Google?

In fact, many businesses are beginning to collect data prospectively for internal testing and validation, and there is little appreciation for the power of design principles. Statisticians could propel major advances through development of “experimental design for the 21st century”!

What skills does a statistician need to engage in data science activities, and how should we be preparing

statistics students? In addition to a strong foundation in statistical theory, methods, and software, statistics students should develop deep proficiency in programming, Rachel says. Coding skills—in R (www.r-project.org) and in Python (http://en.wikipedia.org/wiki/Python_%28programming_language%29) including the use of Python as a scripting language—should be part of any modern statistics curriculum. And statisticians must appreciate issues and tools associated with parallel computing, combining data from disparate sources, and handling textual and streaming data.

Familiarity with data visualization techniques and popular tools like D3.js (<http://d3js.org>) would be ideal and could enliven curricula and projects. Exploratory data analysis, which is generally not taught formally in many statistics programs, should be emphasized. Training in machine learning methods also is key. Not to mention communication skills.

Rachel stressed the importance of exposure to “real world” problems—the disconnect between curriculum and the “messiness” of the real world is greater than it has ever been. She advocates engaging local businesses and research organizations to present case studies to students, as she did in her course. Not only will this acquaint students with what they might confront, but also such interactions can forge connections that can inspire needed statistical research.

What can we do as individuals, a profession, and an association to address the concerns noted above? Rachel’s thinking? Sponsor and attend events that bridge disciplinary boundaries and afford opportunities to interact with scientists with massive data problems such as the University of California at Davis 2013 Statistical Sciences Symposium: Analysis of Complex and Massive Data (www.stat.ucdavis.edu/symposium2013). The ASA could make a big impact by sponsoring or collaborating in a conference on statistics and data science featuring top data scientists and statisticians as speakers.

Participate in data science Meetup groups (<http://data-science.meetup.com>). There are scores of these in San Francisco (http://data-science.meetup.com/cities/us/ca/san_francisco), Washington, DC, (www.meetup.com/Data-Science-DC), New York (<http://bit.ly/11Hr2xG>), Boston (<http://bit.ly/ZJR3eU>), and elsewhere—or consider forming one. We statisticians should seek these out and attend and offer to speak, and we should encourage our students to do likewise. In fact, Rachel and several colleagues have started The NYC Data Skeptics Meetup (<http://bit.ly/18xKW3s>), which focuses on all aspects of data from a “skeptical perspective” on the hype surrounding Big Data and data science.



Rachel Shutt

Photo taken by Nina Krstic

Statisticians in academia interested in engaging in data science should seek sabbatical opportunities in industry, and departments should reach out to industry data scientists and invite them to present seminars, contribute to the curriculum, and serve as adjunct faculty. Departments can propose partnerships with computer science, operations research, and other disciplinary units on campus to develop and team-teach courses and to sponsor joint seminars and working groups. Such interactions will reveal areas in which statistical research is needed.

Rachel noted in closing that she fears academic departments of statistics could be viewed as obsolete and be phased out over the next decade if we do not evolve to embrace this challenge—data science is not going away. She suggests we ask ourselves, “How would you feel if there were no departments of statistics 50 years from now?” It is essential that we confront this head-on; otherwise, the many philosophical issues data science presents demanding deep statistical thinking will not be addressed.

I am grateful to Rachel for sharing her candid views with me. She has convinced me that the ASA Big Data initiative is an essential step toward addressing some of these challenges at the association level, laying the groundwork for curriculum enhancements, significant engagement with stakeholders, and professional development. We aren’t data science, but we have a critical role to play. I encourage you to consider steps you can take locally to raise awareness of the importance of statistics in data science.

Marie Davidian

2013 Election Results

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New Podcast, Radio Program Explore Stories Behind the Statistics

Program created by unlikely pair of Miami University professors

An unlikely pairing of Miami University professors—one in statistics and the other in media studies—has resulted in the creation of a new podcast and radio program called "Stats and Stories" that looks at the stories behind the statistics we use on a daily basis to make decisions.

The program will tap into the growing interest and popularity across the world in statistics and how the data analysis provided by statisticians improves the decisionmaking of governments, private companies, and individuals.

Each "Stats and Stories" episode will feature a guest expert in lively conversation with moderator Bob Long and panelists John Bailer (The Stats Guy) and Richard Campbell (The Stories Guy).

The first episode, accessible online at www.statsandstories.net, examines the long-time link between baseball and statistics and how this connection has strengthened with the growing presence of sabermetrics in player and team management. The episode's featured expert is Jim Albert, co-author of *Curveball: Baseball, Statistics, and the Role of Chance in the Game*, editor of the *Journal of Quantitative Analysis and Sports*, and professor of statistics at Bowling Green State University.

Although the initial episode looks at sports, the emphasis of "Stats and Stories" is on the exploration of the stories behind statistics from a wide range of areas, many of which most people are not aware statistics has a role. For instance, the next episode will feature an expert from the U.S. Census Bureau talking about the country's Decennial Census.

Future expert guests will address the interplay of statistics with forensic science, the assessment of risk using statistics, detecting environmental change using climate models and statistics, projecting national financial patterns by statistical analysis, how statistics helps companies develop customer loyalty programs that customize shopping experiences, and how a dating service uses statistics to select potential matches.

Campbell, chair of the media, journalism, and film department at Miami University, and Bailer, chair of the statistics department, developed the new informational program as a follow-up to a course they team-taught a couple years ago. Their News and Numbers course worked thanks to the interplay between the journalistic narrative and evidence-based decision-making perspective of statistics, said Campbell.

"I knew the collaboration would work when Professor Bailer asked the class, 'What is the story told by the data?'" explained Campbell. "I knew that moment that the connection with the narrative was common ground for us."

Multiple other factors influenced the development of the "Stats and Stories" program, added Bailer. "Last fall, the presidential election predictions of noted statistician Nate Silver and others, which were derived from statistics and math models, drew increased public attention to the field of statistical science," explained Bailer. "Also, the recent movie *Moneyball* celebrated the use of data to make better personnel decisions in sports. And finally, 2013 is the International Year of Statistics, a worldwide promotional campaign supported by more than 2,000 organizations from 123 countries that is educating the public about the important contributions of statistics to our global society."

While neither have experience in radio, Campbell and Bailer are working hard to deliver an informative and entertaining program that they will make available via an online podcast. The partnership with Long, a former National Public Radio (NPR) news director and on-air program host, has smoothed the transition from the classroom to radio/podcast format. The duo also hopes to persuade local NPR stations to air the "Stats and Stories" program.

Bailer is university distinguished professor and chair of the department of statistics at Miami. He is a member of the American Statistical Association and sits on its board of directors. He is an alum of Miami University and has taught at the school since 1988.

Campbell was named director of Miami University's journalism program in 2004, following teaching roles at Middle Tennessee State, the University of Wisconsin-Milwaukee, Mount Mary College, and the University of Michigan. He recently was appointed chair of Miami University's new department of media journalism and film.

Long is a visiting instructor in the new media department at Miami. He spent nearly 26 years in broadcast news, serving as news director of two commercial radio stations and two public radio stations.

"Stats and Stories" is accessible online at www.statsandstories.net. ■

Statistics Without Borders at the American Bar Association Rule of Law Initiative Retreat

Tunisia. Haiti. Azerbaijan. Cambodia. Burundi. These are just a few of the emerging or fragile democracies in which the American Bar Association Rule of Law Initiative (ABA ROLI) works to improve access to justice, uphold human rights, and strengthen legal institutions. Achieving such ambitious goals often requires years of patient slogging through incremental successes and setbacks. It also presents special challenges for monitoring and evaluating project outcomes and impacts.

Recognizing this, the ABA ROLI staff recently turned to Statistics Without Borders and the AAAS On-call Scientists for assistance. In response to a call for volunteers, six statisticians served as consultants during a recent ABA ROLI staff retreat in Washington, DC:

Art Kendall is a retired political psychologist, a mathematical statistician, an active member of the Council for AAAS's Science and Human Rights Coalition, and member of the ASA's Committee on Scientific Freedom and Human Rights.

David Morganstein is an ASA Fellow and director and vice president at Westat.

Romesh Silva is a demographer who, in addition to consulting with the Human Rights Data Analysis Group, serves on the ASA's Committee on Scientific Freedom and Human Rights.

Fritz Scheuren is an ASA Fellow and vice president at NORC in the Center for Excellence in Survey Research. He was ASA president in 2005.

Noreen Sharpe is undergraduate dean and an adjunct professor of statistics at Georgetown University.

Zhiwei Zhang is a senior survey statistician and executive research and statistical consultant.

Ahead of the meetings, each regional team sent the pro bono statisticians information about one of their projects, including the current monitoring and evaluation plan. Then, during the retreat, each team had the opportunity to dialogue with their assigned statistician, ask questions, and gain ideas about ways to strengthen their methodologies and data collection.

Before the sessions, some staff expressed concerns that because their projects are implemented in ever-changing environments, statistics would be too constraining and impractical. Others asked questions about starting data collection when a project is already under way. Participants also asked whether the benefits of implementing rigorous methodologies outweighed the additional work for local partners with limited resources. Many work in countries where little administrative data are available or where potential survey participants are too afraid to respond to questions.

The statisticians offered "real-world" solutions to help address these challenges, drawing on previous experiences from other contexts. They suggested ways to make strategic decisions about research methods, including frames, samples, measurements, quality controls, and missing data and non-response. The statisticians also discussed cost-effective experiments, strategies when a control group is not feasible, the integrated use of administrative data and surveys, and avoiding and reducing survey errors and biases.

Biopharmaceutical Symposium to Offer Tutorials, Short Courses

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

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

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

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

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

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

Jennifer Rasmussen, ABA ROLI regional director for Asia and the Pacific, appreciated the extensive experience of the volunteers, as well as the time they dedicated to understanding the intricacies of measuring rule of law programs. "I wish we had had more time to spend, since I think it presented interesting concepts and ways to look at data to demonstrate different program impacts," said Rasmussen.

Michael McCullough, ABA ROLI regional director for Latin America and the Caribbean, agreed. "The expertise and experience were very much appreciated and a big help to us."

According to Sharpe, "These sessions are a great way to donate your time and expertise to a group of professionals who can benefit from a tutorial in any number of statistical topics. They were a pleasure to work with."

Zhang called the retreat a "wonderful and fruitful event."

He added, "For immediate, urgent project guidance, sessions like what the retreat can offer can be a quick and effective solution."

The American Bar Association is a national organization of legal professionals and attorneys with nearly 400,000 members. While the sessions were too short to address all of the issues, they established the foundation for continued relations and new statistics and law partnerships. At the end of the day, both the workshop participants and the statisticians learned from each other. Several of the groups discussed future collaborations with the volunteers, including more in-depth training in statistics for staff.

This is just one example of how Statistics Without Borders and the AAAS On-call Scientists initiative are applying scientific methods, knowledge, and tools in one substantive area—understanding and



Noreen Sharpe
Georgetown University

addressing disparities in access to justice—and the service of human rights. If you are interested in getting involved, contact Cathy Furlong, chair of the New Projects Committee, at cathy.furlong@cox.net or Theresa Harris, with the AAAS Scientific Responsibility, Human Rights, and Law Program, at tharris@aaas.org. ■



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Member Spotlight - Kaiser Fung

Melissa Gotherman, ASA Graphic Designer/Production Coordinator



Kaiser Fung

Kaizer Fung is a statistician with more than a decade of experience applying statistical methods to unlocking the relationship between advertising and customer behaviors. He holds a BSE from Princeton University, an MBA from Harvard Business School, and an MPhil from Cambridge University. Although, don't let master's in philosophy fool you; the degree is in statistics, despite the unusual name. "Isn't statistics a kind of philosophy?" asked Fung. "Statistics is about reasonable ways of thinking about, structuring, and dealing with uncertainty. We value reasonableness, not truth."

Fung became interested in statistics at Princeton's operations research program (now operations research and financial engineering). He gives credit to having several great teachers: Howard Wainer, who guest taught the intro stats course; Dick DeVeaux, who taught design of experiments; and John Mulvey, an expert in stochastic modeling and also his thesis advisor.

Desiring some practical work experience after graduating college, Fung decided to go into management consulting. "There are a variety of business problems that can be solved using statistics or operations research methods," he said. "Business managers must deal with uncertainty, and they are always optimizing one performance metric or another."

In the early 2000s, Fung realized having a foot in both camps (statistics and business) gave him a unique advantage—he was comfortable speaking both the technical and business languages. Eventually, he found his way back to statistics by taking a job in analytics at American Express, where he quickly learned analyzing real-world data is a world away from doing problem sets—and it was both fun and challenging.

Fung commends American Express, with their long history of using statistics in managing credit risk and marketing, as being one of the best training grounds for business statisticians. "I'm a big fan of apprenticeships. Being smart is not enough; experience imparts wisdom. I hate to see people waste their time walking into quicksand that others have already identified."

Currently, Fung is employed as vice president of business intelligence and analytics at Vimeo, a high-quality video hosting platform for creative people. "Vimeo is purely a web business, which means we have lots of data." They also have a complex business model. Vimeo's main revenue comes from their subscribers, which leads to more traditional analyses, typical of direct marketing and subscription companies. They also have onsite advertising driven by their 100 million monthly visitors. Fung's

team must track website usage and behavior of these visitors. "Vimeo tends to attract high-quality content that viewers are willing to pay for. Recently, we launched Vimeo On Demand, which allows our subscribers to charge for their videos. That gets us close to the entertainment business model. This means I never have a dull moment. There are more problems to solve than my team can handle."

Fung also writes the acclaimed blog Junk Charts. Junk Charts pioneered the critical examination of data and graphics in the mass media. Since 2005, the blog has received rave reviews from *Science* magazine, *The Guardian*, Yahoo!, and Stanford University Libraries.

Besides his successful blog, Fung has authored two books. His first, *Numbers Rule Your World: The Hidden Influence of Probabilities and Statistics on Everything You Do*, was born out of his dissatisfaction with how statistics is taught. "By teaching it as a math subject, we fail to educate enough people to understand and practice statistical thinking. It's truly unfortunate as life is filled with uncertainty and everyone can use some statistics."

Inspired by the success of *Freakonomics*, Fung wanted to explain statistics without using mathematics. "What impressed me was the complete absence of math in the book. There were no equations or formulas, but more than that, the authors made no attempt to describe the methods used to arrive at their conclusions. That's radical for a book in which every key result is based on regression analysis."

"Recent books like *The Drunkard's Walk* and *Naked Statistics* are still stuck in

Settle your story and then find the tools, never the other way around.

textbook-lite mode. The chapters in these books mirror the intro stats curriculum, from probability rules to sampling distributions to hypothesis testing to regression. I want to explain statistics without using mathematics. I want to treat statistics as liberal arts,” says Fung.

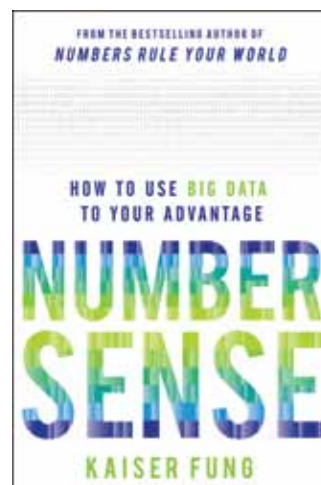
His latest book, *Numbersense: How to Use Big Data to Your Advantage*, was set for release on July 12. With Big Data being the buzzword of the moment, we have all become consumers of data analyses. “Lots of people tell us all kinds of things they claim are supported by data. Unfortunately, many of these analyses are not to be believed. It’s not that the data analysts are ill-intentioned—when there is a lot of data, it is just very confusing.”

Fung describes the term “numbersense” as something all great data analysts share—the ability to sniff around a data interpretation. “In the book, I want to share some of my own methods. I hope readers will pick up a thing or two and become smarter consumers of data analyses.”

The book is targeted at anyone who has ever come across some form of data analysis in the media and wondered, “Wait ... what?” You may have had doubts about the official unemployment rate, you may be frustrated by the constantly changing stories about whether coffee is good or bad for you, or you may have been burned once or twice by bankers pitching their favorite tech stocks. As with his previous book, Fung leaves the math in the background. “I want readers to grasp the statistics without having to learn the language of mathematics.”

Recent graduates who have taken a statistics course should read *Numbersense*, too. “When I hire for my team, I come across many candidates who can do the math, but don’t have the numbersense. I’ve been there myself.”

When asked what advice he would give to young statisticians just beginning their careers in data visualization, Fung says, “Keep sketching, and keep trashing. Settle your story and then find the tools, never the other way around. Hate the default. Imagine your audience. If you don’t have an audience, find one. Inspect your data. Have a point of view. Keep a portfolio.”



Fung's latest book, in which he shares his own methods for data analysis

Fung is a fellow of the Royal Statistical Society and an adjunct professor at New York University, where he teaches practical statistics. Visit his blog, Junk Charts, at <http://junkcharts.typepad.com>. ■



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ASA Takes Part in Annual Capitol Hill Exhibition

Steve Pierson, ASA Director of Science Policy



Genevera Allen discusses her poster with Rep. Jackson Lee (D-TX) and Rep. Jerry McNerney (D-CA).



Sastry Pantula, director of the NSF Division of Mathematical Sciences; Genevera Allen; and Rep. David Price (D-NC)

For the fourth consecutive year, the American Statistical Association (ASA) participated in the annual Capitol Hill Exhibition May 7 sponsored by the Coalition for National Science Funding (CNSF). CNSF is a coalition of 130 professional societies, universities, and other stakeholders who work together to support the budget of the National Science Foundation (NSF). The annual event started in 1995.

Hosted in a House office building across from the U.S. Capitol, this year's event showed off NSF-funded research from 36 groups to members of Congress and their staffs. It was attended by nearly 300 people, including 10 members of Congress.

Representing the ASA was Genevera Allen of the Rice University Department of Statistics and Electrical and Computer Engineering and the Neurological Research Institute at the Baylor College of Medicine. Allen's poster described her work on functional brain connectivity and was especially interesting to those attending the exhibit because of its relevance to the Obama Administration's Brain Research through Advancing Innovative Neurotechnologies (BRAIN) Initiative and the White House Office of Science and Technology Big Data initiative (per subject, fMRI produces about four gigabytes of data).

Prior to the evening reception, Allen and ASA Director of Science Policy Steve Pierson visited six congressional offices: Sen. John Cornyn (R-TX), Rep. John Culberson (R-TX), Rep. Sheila Jackson Lee (D-TX), a majority staffer for the Commerce, Justice, Science (CJS) subcommittee of the House Appropriations Committee, and minority and majority staffers for the House Science, Space, and Technology Committee. They visited Culberson because he serves on the CJS appropriation subcommittee, which has authority over NSF's budget, and his district is adjacent to Rice University.

Overall, Allen's meetings went well. Staffers understood the importance of NSF funding and its benefit to the country. The general feedback, however, was that it would be hard to realize the requested increase of more than 10% for NSF's budget for fiscal year 2014 (FY14). Indeed, there seemed little optimism that this would be the year Congress would finalize some of the budget for FY14 before it begins October 1. In other words, the federal government will again operate on a continuing resolution for part of the fiscal year.

At the evening reception, Allen explained her research to a steady stream of people, including members of Congress, NSF officials, congressional staff, and fellow exhibitors. Besides her interesting research topic, Allen made a compelling story about the importance of NSF funding because she attended Rice University as an undergrad intending to major in music. It was through an NSF program—Vertical Integration of Research and Education in the Mathematical Sciences (VIGRE)—that she became involved in a summer research program that hooked her on a career in statistics. Even her graduate work at Stanford University was supported by the VIGRE program.

Allen was also an excellent representative of the statistics profession. She epitomized the statistician at the center of a multidisciplinary team performing cutting-edge research and effectively communicated the importance of having a statistician as part of such a team to tackle many of today's key research challenges.

After her long, effective day of advocacy for science, statistics, and funding on the Hill, Allen commented, "It was a tremendously valuable experience, and I feel I learned so much about how the science policy system works. I will encourage my colleagues to be more vocal on these issues to their elected officials."

Visit <http://scavonephotography.zenfolio.com/p827538226> to view more pictures of the exhibit. ■



From left: Cora Marrett, NSF acting director; Genevera Allen; and Richard Yamada, professional staff of the House Science, Space, and Technology Committee

The Department of Statistics at Texas A&M University
Invites Nominations for the
Raymond J. Carroll Young Investigator Award



Nominations for the 2013 Raymond J. Carroll Young Investigator Award are currently being accepted. This award is presented bi-annually by the Department of Statistics at Texas A&M University to an outstanding young researcher in statistical science. The awardee must have completed his/her Ph.D. within the previous 10 years of receiving the award and must have demonstrated outstanding scholarly contributions in statistical methodology and applications. Nominations must be written and include a curriculum vita. Nominators are encouraged to supply supporting documents such as letters of recommendation. Self-nominations are invited and encouraged. Correspondence by e-mail is preferred but not required. Nominations and supporting documents should be sent to the address listed below. The deadline for award submissions is September 30, 2013.

Prof. Jeff Hart, Chair
Raymond J. Carroll Young Investigator Award
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hart@stat.tamu.edu

For more information on the Raymond J. Carroll Young Investigator Award, please visit our website at www.stat.tamu.edu.

The State of Web Mapping at the U.S. Energy Information Administration

Mark C. Elbert, Director of the Office of Web Management



Mark Elbert has served as the director of the Office of Web Management for the U.S. Energy Information Administration for the last four years, maintaining and enhancing www.eia.gov.

The U.S. Energy Information Administration (EIA) is using the geographical attributes of its statistical data sets to create new web products with interactive maps, highlighting the geospatial component of the nation's energy infrastructure and resources. Two recent EIA web products, the State Energy Portal and the Electricity Data Browser, are exemplars of the potential to add data-driven maps to existing publications.

The State Energy Portal contains information such as rankings, key statistics, quick facts, analysis, and links to additional resources for each state. However, the interactive states maps, made possible by EIA's new energy mapping system, steal the show. Users can choose among five base maps, such as satellite imagery or a street map, and then layer on any combination of 30 available layers, such as natural gas fields, electric power plants, federal lands, and renewable resources. The application also has 12 predefined themes such as infrastructure, fossil resources, or electricity to simplify the layer-selection process.

The second product, EIA's Electricity Data Browser, has a number of visualization tools, including animated heat maps of the United States, to visualize state-level statistics over time. While the Electricity Data Browser's maps are simple infographics compared to EIA's national mapping system, they do display a temporal component. EIA launched both products in the past year during a period of rapid innovation in the area of web-mapping tools.

Emerging capabilities of infographic map tools, such as the one used in the Electricity Data Browser, will blur the line between interactive infographic maps and true geographic information systems. The key to leveraging any of these mapping tools is to have well-structured databases with defined geospatial and temporal attributes.

Both products used newly released tools for creating interactive web maps and graphs, but took different implementation approaches, each with their strengths and weaknesses.

The Electricity Data Browser (www.eia.gov/electricity/data/browser) was developed first. It was custom written, but employed 20 open source JavaScript libraries to perform specific functions. For example, the Highcharts library creates the interactive charts, while the jVectorMap library creates the heat maps, which are animated with the help of the jQuery library. This approach allowed EIA to produce and launch the first version in just 12 weeks using a team of two programmers, a graphic designer, and a manager. Examining the browser's code base, the open source libraries comprised about two-thirds of the total code and were instrumental in the project's quick delivery. The team had the freedom to pick which open source libraries to include, creating a unique platform of tested and documented building blocks. This limited the custom programming to interfacing between the open source components and the data services on EIA's server to respond to user queries.

EIA's state portal maps (www.eia.gov/state) were developed immediately afterward. The portal uses ArcGIS Server, a commercial off-the-shelf (COTS) mapping software by ESRI, to implement its online maps. ArcGIS Server delivered configurable maps supporting five base maps and any combination of 34 energy resource, infrastructure, and administrative boundary layers. Setting up the server was relatively simple. The bulk of the work was actually gathering, creating, and checking the layers.

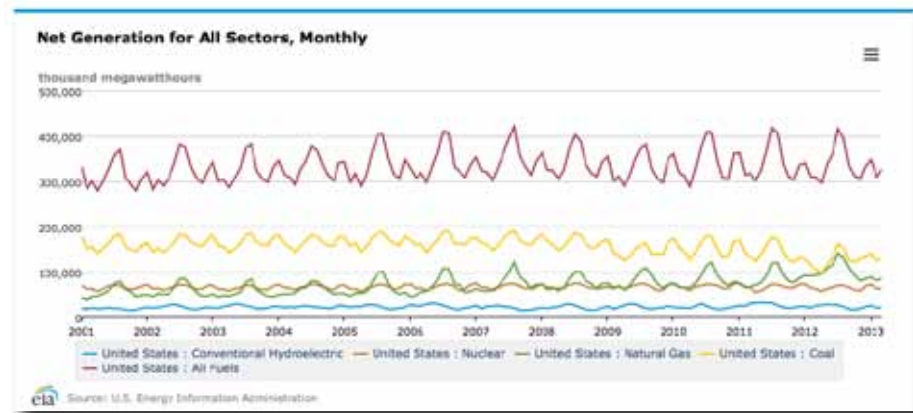
With such different approaches, it is natural to ask which is better.

Before discussing the pros and cons, it is worth noting that online mapping is a space in flux. The creators of the various mapping servers and toolkits are rapidly innovating to take advantage of the computing and rendering capabilities of the latest web browsers. This means the gap in mapping capabilities between the commercial leaders and the open source community is narrowing. New open source web-mapping libraries such as Leaflet.js and MapBox are emerging with impressive new features. Therefore, selecting an enterprise mapping solution for the web should be avoided at this time. It would simply be unwise to cut off your organization from this innovation. Business needs will likely dictate different map solutions for different web products, as the mapping solutions tend to be optimized for different mapping tasks.

When maps are building components of a statistical information system, the open source approach has clear advantages.

In statistical information systems, the need is often for less detailed maps to visualize aggregated statistics as heat maps (also known as choropleth maps) or to provide sized and color-coded markers to visualize statistics associated with point locations such as the electricity generation of power plants. Open-source libraries can be combined easily with charts, tables, and user controls to create powerful statistical query tools.

The Electricity Data Browser, for example, allows users to find, chart, and analyze any of 430,000 time series. State-level aggregate statistics can be visualized as a heat map of the United States, and even animated to visualize patterns over time. In every instance, the data and relative standard error can be inspected and downloaded and aggregated statistics can be drilled down to the underlying generation plants' data. Effectively, using open-source building blocks makes the development of advanced custom query tools like the Electricity Data Browser affordable.



That said, we continue to be pleased with our selection of ArcGIS Server to power EIA's complex state portal maps. We found no open-source solution that could handle more than 30 interactive layers. To reiterate, different requirements drove the selection of different mapping tools.

COTS solutions offer an easier route to mapping statistical data. The maps are interactive and have impressive layering capabilities. However, COTS software lacks the flexibility to combine maps with custom query tools in truly novel ways to present a particular data set optimally.

Open source is often better for a full custom solution and for data-driven infographics. EIA has found open-source libraries to be capable and only getting better. The implementation time will be longer and require a highly skilled web development team. However, a small team with the right programming and presentation skills can create cognitively advanced web products designed to best present a particular data set.

Therefore, for the foreseeable future, we expect to use a variety of tools and approaches to visualize the geographic attributes of the agency's statistics, depending on a project's goals and the evolution of the available visualization libraries and toolkits. ■

Above is the EIA's Electricity Data Browser (www.eia.gov/electricity/data/browser).

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ASA's Got Talent to Energize 175th Anniversary

Dionne Price and Amy Herring, 175 Steering Committee Members



The year was 1839. The president of the United States was Martin Van Buren; the first photo of the moon was captured; Charles Goodyear invented rubber vulcanization; and the American

Statistical Association was organized in Boston, Massachusetts. The ASA is the nation's second-oldest learned society, and in 2014, it will celebrate 175 years of existence with the theme "Celebrate our past, energize our future."

Members of the 175th Anniversary Steering Committee encourage everyone to become involved in activities that will be planned by chapters, committees, outreach groups, sections, and other organizations to commemorate the anniversary (activities to be posted at www.amstat.org/asa175/activities.cfm). We are confident the events will highlight

the contributions of statisticians throughout history and ignite statistical innovation for the future.

Areas of focus for our 175th anniversary include, but are not limited to, bringing greater exposure to the field of statistics, welcoming colleagues to the Big Tent that is the ASA, and continuing the development and application of methodologies that will have global impact.

In anticipation of the anniversary, we invite all JSM attendees to drop by the 175th anniversary booth at the JSM 2013 EXPO. Attendees will have a once-in-a-lifetime photo opportunity with ASA Fellows who are no longer with us, including David Blackwell, Gertrude Cox, and John Tukey. We know no EXPO booth is complete without souvenirs, so we have a keepsake for you as well (stop by early in the meeting to ensure you get one).

Move over American Idol, America's Got Talent, and Dancing with the Stars! A significant new talent competition, ASA's Got Talent, will be launched in 2014 to help energize our future. Entrants will submit a short (<5 min.) video of their statistically themed performance online by January 1, and an esteemed panel of judges will notify finalists by February 1. During the ASA 175th Birthday Party on Tuesday evening at JSM 2014 in Boston, finalists will perform live before the JSM audience, which will vote wirelessly to select the ASA's Got Talent winners.

To stay abreast of activities planned for 2014, visit www.amstat.org/asa175/index.cfm. ■

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MASTER'S NOTEBOOK

If I Were Starting Over ...

Richard Morris

Much of my early career was spent as a master's-level statistician in a contract research organization. I provided statistical and programming support to researchers at the National Institute of Environmental Health Sciences. I feel fortunate to have worked in this environment because I was able to combine my training in biology, ranging from evolutionary concepts to molecular interactions, with my interest in statistics, driven by an interest in interpreting real data. I used to think I just got lucky. But, I now think opportunity and preparation intersected in a way I simply did not appreciate until later in life.

Today, I believe the opportunity for a life-changing intersection between statistics and, for want of a better term, world knowledge is enormously greater than when I began my career. Technological advances in the rate data are acquired and recognition of the value of integrating diverse data types offer previously nonexistent contexts for developing statistical careers that touch important world problems.

Those of you who are just beginning to choose how you want your statistical training to affect the world have many emerging opportunities. I encourage you, as I did not, to think broadly about which data analysis frameworks and workplace environments you would like to find yourself in as a statistician. The emergence of Big Data brings with it a notable increase in the range of interdisciplinary collaborations. In business, medicine, and politics, a large and complex data landscape is enabling new avenues of applications of statistics and, with them, new opportunities for cross-disciplinary collaboration. What choices will you make?

If I were starting over, I would consider working in a Big Data setting. Increases in the scale and diversity of data now drive many new statistical opportunities in multidisciplinary projects. The acquisition of Big Data, made possible by technological advances in instrumentation, is largely driven by compelling, complex, and important questions that Big Data may help answer. The automated acquisition of remote sensing data has steadily increased in recent years, along with better descriptions of global geological and climatological dynamics. Increased resolution of non-invasive, medical imaging technologies, enabled by new instrumentation and computing techniques, offers new avenues in brain research. Knowledge of consumer behavior has benefitted from mining huge, electronically acquired data sets for interpretable patterns of economic transactions. And the level of molecular

Not only has the scale of data changed since I began my career, but the culture ...

description available for medical translation to clinical settings brought about by genomic, proteomic, and metabolomic data is unprecedented. These and other Big Data settings provide new challenges and opportunities for a statistical career. If I were starting over, I would consider one of them.

Not only has the scale of data changed since I began my career, but the culture in which statisticians work also has changed. Efforts to integrate related, but loosely associated, disciplines such as chemistry, computer science, and clinical medicine are motivated by the challenge of solving big problems that transcend traditional discipline boundaries. Such problems and the teams formed to tackle them have contributed to an increase in the diversity of scientific cultures that productively interact. Choosing to join one of these collaborative settings places a premium on interpersonal skills necessary to communicate effectively among different participants. I believe statisticians have a unique opportunity to foster productive communication among team members. Although you may be asked to work on a specific set of activities on behalf of the group, these activities need not limit your contributions to the group. Ideas that cross discipline boundaries often arise from thoughtful statistical input to group goals. An effective collaborative environment recognizes contributions from each of its members and finds ways to apply them to questions of importance. To efficiently work in such an environment, you will need to bring not only the intellectual discipline that is part of your statistical training, but also a belief that team work is essential to solving important problems. If I were starting over, I would consider working in an integrated team environment.

But, of course, I won't be starting over. Nevertheless, it is a perspective worth spending a moment on since you have choices to make. A career in statistics makes choices available to you. What kinds of problems will you choose to work on? In what setting will you pursue those problems? How will you use your training to improve the world? How you go about answering these questions is important because someday you may ask yourself, "If I were starting over ..." ■

STATtr@k

Becoming an Environmental Statistician

Lance A. Waller, Rollins Professor and Chair of the Department of Biostatistics and Bioinformatics at Emory University



When I was eight or nine years old, I completed a school assignment wherein I used crayons to draw a picture of my future career. The picture shows me flat on the ground, hiding behind a bush, and watching a robin with the word “biologist” spelled out above. Many decades later, I now find most of my career has involved more time meeting with people or working on a computer than crouching behind bushes. Nevertheless, I still enjoy reading about, thinking about, and talking about the environment and ecology, especially their relationship to human and animal health. This interest, combined with my training in statistics, provided the framework for a career in environmental statistics, an area I thoroughly enjoy and feel is ripe with research and career opportunities for statisticians. For those considering a career in environmental statistics, I offer a few suggestions.

If you find the application interesting, the statistics will be more fun.

Environmental applications are what make statistics “environmental.” Such applications also often make the statistics challenging since most environmental applications do not fit neatly into an experimental setting, and even results from controlled experiments are used to infer patterns in an uncontrolled, dynamic, and noisy setting. As such, environmental applications offer a rich set of problems requiring clever application of existing tools and development of new tools to address problems particular to the application at hand.

If you find the application engaging (e.g., if you are really curious as to how air pollution changes over the course of a day, how a sea turtle chooses a nesting site, or how an environmental bacterium can infect a person), these challenges become a puzzle and you find yourself pondering both the application and your methods of analysis as you walk the dog, drive to work, or mow the lawn.

Puzzles are much more fun than calculations alone, and finding just the right calculations to solve a puzzle can be rewarding and fun. In general, if you find the work fun, you think about it more often and in more depth, and you do better work.

Early in my career, I was envious of statisticians who worked on data sets I found interesting (e.g., crater patterns on Venus, dive patterns of elephant seals). I wondered how they could be so lucky to have collaborators drop such beautiful data sets in their laps. Over time, I found that if I sought out researchers in areas I found interesting (e.g., disease

ecology), I would find individuals with interesting questions and have access to precisely these interesting data sets (e.g., the spatial diffusion of raccoon rabies).

After a few conversations (and dedicated reading on my part), we could often find questions they wanted to answer from data with many interesting features requiring nonstandard statistical analysis. When I could answer an environmental question from their data using methods from my toolbox, an ongoing collaboration began.

Once you establish a reputation as someone who can answer interesting questions, the interesting questions start to come to you.

Let the application drive the methods, not the other way around.

Since the application makes statistics “environmental,” be sure your methods answer an environmental question as well as a statistical question. Too often, statisticians are tempted to use methods we are familiar with that don’t quite address the environmental question of interest. Rather than answering the question we *should*, we answer the question we *can*.

Adding temporal correlations to a problem simply because our dissertation involved temporal effects in another application may be interesting statistically, but may not address the environmental question of interest.

In collaborative work, it is essential to understand the language of your collaborators and to be able to converse fluently in it. Read their literature, listen to their seminars, and ask a lot of questions. Being able to point to related work in the environmental field will enhance your vocabulary,

thinking, and statistics. Every analysis tells a story, and knowing the background helps you tell a more compelling story.

Specialize by diversifying.

Environmental statistics involves many sorts of statistical skills: longitudinal and spatial statistics, time series, missing data, measurement error, dynamic systems, and many more. Fill your methodological toolbox with the skills related to the questions you find most interesting. Learn the breadth and depth of data sources available to address these questions. Learn to identify the statistical questions underlying the related environmental questions and familiarize yourself with other areas of application addressing similar statistical questions.

Recognize that, as a statistician, you have the ability to translate a solution from one application area to another. This is a valuable skill and often enables bigger advances than small improvements to standard analytic procedures within a particular environmental field.

Write statistically and environmentally.

Keep your ideas clear and show a logical progression for both statistically and environmentally savvy readers. Write clearly for both types of reader. This is not always easy, but the challenge is minimized the more you (as a statistician) read the environmental literature. You find out what “counts” as evidence, what arguments are compelling, and what previous research sets the context

for your results. I find it helpful to think of guiding the reader through my thought process, tables, maps, figures, and results in a manner that, when I reach a conclusion from the data, the reader thinks, “Well, of course.”

Living in two worlds.

In summary, a successful environmental statistician reads, writes, and thinks environmentally as well as statistically. A successful environmental statistician has a wide variety of tools available and a keen eye for identifying the right tool for the job, even if that tool has never been applied to an environmental application. The environmental statistician may be flat on the ground, peering through the brush of complicated data, but she or he is still looking for the robin. ■



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ASA Applauds Sen. Hagan on Resolution Designating 2013 as International Year of Statistics



The American Statistical Association praised Sen. Kay Hagan (D-NC) for the introduction of a resolution designating this year as the International Year of Statistics.

“ASA and its more than 18,000 members are extremely grateful to Sen. Hagan for introducing this special Senate resolution,” said ASA President Marie Davidian, William Neal Reynolds Professor of Statistics at North Carolina State University and a constituent of Hagan’s. “Sen. Hagan’s resolution will help educate her Senate colleagues, Hill staffers, and untold numbers of people around the country about the growing, beneficial contributions that statistics and statisticians are making to improve our way of life and inform the policy decisions of our elected representatives at every level of government.”

Hagan introduced the resolution in the Senate May 21. The measure was referred to the chamber’s Judiciary Committee for further consideration.

The International Year of Statistics (Statistics2013) is a worldwide campaign promoting the power and impact of statistics on everyday life and introducing young people to careers in statistical science. Statistics2013 is supported by 2,000 organizations in 122 countries. The campaign is organized in the United States by the ASA. Other founding organizations are the Royal Statistical Society, International Statistical Institute (and the Bernoulli Society), Institute of Mathematical Statistics, and International Biometric Society.

In part, the Hagan resolution recognizes that “the science of statistics is vital to the improvement of human life because of the power of statistics to improve, enlighten, and understand” and that “statisticians contribute to the vitality and excellence of myriad aspects of United States society, including the economy, health care, security, commerce, education, and research.”

In addition to designating 2013 as the International Year of Statistics, the resolution calls on the Senate to support the goals and ideals of Statistics2013 and recognize the need to educate the public on the merits of statistical sciences and promote interest in the sciences among youth. It closes with an appeal for U.S. citizens to participate in the ASA-backed campaign.

Statistics2013 participating organizations include national and international professional statistical societies, colleges and universities, primary and secondary schools, businesses, government statistical agencies, and research institutes.

Throughout 2013, participating organizations will promote the importance of statistics to the scientific community, business and government data users, the media, policymakers, employers, secondary school and college students, and millions of people around the world. Many participating organizations are conducting seminars, media outreach, and other educational and promotional activities in their countries.

Learn more about the International Year of Statistics at www.statistics2013.org. ■

Statistical Society of Canada: What Is It and What Does It Do?

Christian Léger, SSC President

As part of the International Year of Statistics, it is a pleasure to share the situation of statistics in Canada and some of the exciting projects being developed in the Statistical Society of Canada (SSC). I am grateful to Marie Davidian, ASA President, for the opportunity.

The last time *Amstat News* readers had a chance to read about the status of statistics in Canada was in March 2004 when Nancy Reid was president-elect. I will describe some of the links between our two organizations, list the activities of the SSC, and go over various aspects of statistics in Canada, before concluding with the future of statistics and some common challenges. Since a number of our members, in Canada and in the United States, are also ASA members, some of this will be familiar, but I hope other readers will learn something interesting.

The SSC and ASA Working Together

The SSC and ASA work together on a number of projects. We have joint chapters in Montréal, Ottawa, and Southern Ontario (they are called regional associations in the SSC). The SSC has representation of the ASA Committee on Women in Statistics and Committee on Meetings. ASA Executive Director Ron Wasserstein attends our Board of Directors meeting that takes place during our annual meeting, which allows useful sharing of information. Moreover, along with the IMS, ENAR, and WNAR, we are official partners of the Joint Statistical Meetings and constitute the Committee of Presidents of Statistical Societies (COPSS), which sponsors some of the most prestigious honors in our profession.

What Is the SSC?

The SSC is the only national organization in Canada devoted to the development of the professional interests of statisticians and probabilists. We have more than 1,000 members, including a good number of practitioners. About a quarter of our members are students, and recruiting and retaining them is a major challenge, as is the case with most organizations.

We now have six sections: Biostatistics, Survey Methods, Business and Industrial Statistics, Probability, the newly created Statistical Education, and Actuarial Science. The latter was created to serve as the home for academic actuarial scientists.

We publish the successful *Canadian Journal of Statistics*, as well as *Liaison*, our bilingual newsletter. In fact, we work hard to offer our services in both official languages (English and French).

The main event of the year is our annual meeting, which usually takes place in late May or early June. It attracts more than 500 participants over three days, plus one day of workshops. A meeting of that size is big enough to offer diversity in the scientific program, but cozy enough to allow ample opportunity for interaction among participants. It even includes a banquet! This is the appropriate venue to present our awards, including our most prestigious—the Gold Medal—for outstanding contributions to statistics of probability, but also the *Canadian Journal of Statistics* Award for the best paper appearing in a volume and the CRM-SSC Prize for excellence in research within 15 years of completing a PhD.

Our community greatly encourages student participation in the annual meeting, and many



join the SSC this way. Students are invited to form teams to take part in the Case Studies for Data Analysis competition. They also are encouraged to present their research, and the best presentations receive an award. This year, we introduced the student conference, which took place just before the annual meeting last May in Edmonton, Alberta.

Another important program we have is accreditation. Implemented in 2004, our accreditation program has been successful. So far, the qualifications of professional statistician (P.Stat.) and associate statistician (A.Stat.) have been awarded to 147 and 84 individuals. We worked with the ASA when its accreditation program was introduced in 2009, and we have a reciprocity agreement so that the evaluation of an accredited member of one organization is fast-tracked if accreditation is sought in the other organization.

We also have Census at School, the popular project used in grades 4–12 to stimulate statistical inquiry, in common. Canada joined the international project in 2003, and Statistics Canada ran it until 2012.



The future of statistics is of concern to the SSC, as well as for many other statistical organizations throughout the world. As we all know, statistics suffers from a branding problem.

Due to cuts, Statistics Canada no longer runs it, and the SSC has taken the program over.

The SSC relies heavily on a large network of volunteers to carry out business. This is, of course, also true of big organizations like the ASA, but in our case, we don't have a large staff to support the work of the volunteers. In fact, while we have contracted with the Canadian Mathematical Society for basic services, we currently do not have dedicated staff. I am grateful to the other members of the executive committee for the tremendous amount of work they accomplish, and we are looking at ways to improve the situation shortly by hiring an executive assistant.

Training

Statistics is healthy in Canada. Our universities, essentially all public, offer good undergraduate and graduate programs. In fact, students from all over may find the best value for their money at Canadian universities, given that tuition is usually lower than in the United States.

The quality of the research in statistics and probability in Canada has been recognized numerous times. For instance, in the last 30 years, seven of the prestigious COPSS award recipients were trained at either the undergraduate or graduate level in Canada. For a country of our size, this is a pretty good track record!

Of course, attracting good students to the field remains a challenge. While the financial crisis has affected Canada, our economy (and banking system) is robust enough that universi-

ties have continued to hire. It is worth noting that faculty salaries in Canada are for 12 months and research funding does not pay salary, even in biostatistics, except in rare circumstances.

Job Market

The job market for statisticians remains good in Canada. Most graduates entering the job market have a master's degree. Job openings in biostatistics are, of course, often advertised, and the financial sector is also a big employer of statisticians. Because of the attractiveness of the job market for master's-level graduates, recruiting local students for the PhD is often a challenge.

Research Funding

Research funding in Canada is quite different than in the United States, and there have been many important changes in the last few years. The main source of funding for academic statisticians and probabilists is the Discovery Grants program of the Natural Sciences and Engineering Research Council (NSERC). I am sure many of you have been invited to review such proposals. The discovery grants system funds a researcher's program over five years. It is not a project-based program in that if the researcher eventually discovers a more promising research program, she can switch. It used to be that most active researchers in Canada would have an NSERC grant. On the other hand, they were typically small, with an average annual grant in the neighborhood of \$12,000 and few larger grants in the \$30,000–\$50,000

range (there is no summer pay in these grants; they only cover travel, research, and student support).

The previous system was Markovian: The level of the previous grant was the starting point for the evaluation of the next grant. Five years ago, the system changed. Researchers are now explicitly evaluated on three criteria: the quality of the researcher, the quality of the proposal, and the formation of highly qualified personnel. All these criteria were used in the past, but now a grade is given to each independently. The grades are added, leading to a bin. The funding level of each bin is then determined, depending on the available budget.

So far, so good, except that statisticians and probabilists used to be evaluated in separate evaluation groups and now are all part of a single mathematics and statistics group. This means that the categories corresponding to grades (i.e., strong, very strong, outstanding, exceptional) must be calibrated among all mathematicians and statisticians, rather than simply within these two disciplines. This is generally a difficult task. Moreover, mathematicians often have a good opinion of their work, while statisticians are often critical.

Not surprisingly, the distribution of the bins for the mathematicians is stochastically larger than for statisticians so that in the last few years, there has been an important transfer of funds from statisticians to mathematicians. For instance, 20% of our budget was transferred to mathematicians in 2012. Needless to say, statisticians are very unhappy with the new system.

Funding for biostatisticians comes from NSERC for the methodological research and from the Canadian Institutes of Health Research (CIHR) for the clinical research. Unfortunately, the scarcity of funds makes the funding of methodological research in biostatistics by NSERC problematic, except for the very best researchers.



The advancement of medical research by biostatisticians will not count when evaluated by NSERC, so time devoted to clinical research will weaken a case as opposed to a statistician, so that the net result for many is to be denied funding by NSERC. On the other hand, CIHR rarely funds the advancement of methodological research.

The only bright light in the funding picture is the recent creation of the Canadian Statistical Sciences Institute (CANSSI). Despite the size of its population, Canada has three mathematical institutes like MSRI, one each in Montréal, Toronto, and Vancouver (CRM, Fields Institute, and PIMS), plus the fantastic Banff International Research Station (BIRS) located in the Rockies, just west of Calgary. All had activities in statistics, but despite the presence of a statistician on a scientific advisory committee, decisions were always taken through the prism of mathematicians.

As an outcome of a long-range planning exercise for the mathematical and statistical sciences mandated by NSERC—and chaired by Nancy Reid—CANSSI was created. Its NSERC funding will be modest at first, but the key point is that we will now have an infrastructure to develop research in the statistical sciences in Canada. Having witnessed the impact of the three mathematical institutes on the development of mathematics research in Canada and its rise on the international scene, I have no doubt CANSSI will eventually have the same impact for statistics.

Public Policy

As statisticians, we are all conscious of the importance of good official statistics to devise the very best evidence-based public policy. Canada is very fortunate to count on Statistics Canada, recognized worldwide for its excellence. The strength of having a single organization sharing its know-how among its census, labor, health,

household, and agricultural programs—to name a few—is undeniable. Unfortunately, in the last few years, Canadians have witnessed a decline in the quality of their national statistics due to governmental decisions.

Since 1971, the census had mandatory long-form and short-form questionnaires. On the basis that the long-form census was too intrusive into the lives of Canadians (e.g., by asking how many bedrooms your house possessed), the conservative government decided to replace the long-form census with a voluntary national household survey in 2010. To compensate for the expected nonresponse and resulting bias, the government increased the sampling fraction from one in five to one in three households. Not surprisingly, the response rate decreased from somewhere around 95% to 70%, and all for a similar cost. The impact of this decision will be felt for years, as the long-form census played a crucial role in many decisions and served as a frame for other surveys.

In the same vein, the conservative government purposefully ignores a lot of data when developing policies, such as its continuing policy of getting tough on crime, while Statistics Canada data show crime statistics continue to decline.

Finally, most federal government scientists are banned from addressing the media without first going through the communications department. Talks at conferences, even by statisticians, need to be approved. In short, there is much we take for granted in a society, such as evidence-based decisionmaking, yet governments can have a great impact and change the way it does business in a way that is not always for the better.

Future of Statistics and Common Challenges

The future of statistics is of concern to the SSC, as well as for many other statistical organizations

throughout the world. Working together on common challenges is important to make real, lasting progress. As we all know, statistics suffers from a branding problem.

In her SSC Presidential Invited Address at the 2013 annual meeting, Sallie Keller, former ASA president, showed a poster concerning Big Data with many terms associated with it and asked what was missing. The word statistics was nowhere to be seen! Hopefully, the International Year of Statistics will increase the awareness of the public regarding the importance of statistics as a field. But it will continue to be important to work together if we are to solve these problems. COPSS is a good forum for that purpose.

Another challenge we have in common with the ASA is accreditation. While it is already a success, much work remains to better publicize the program to employers of statisticians. The offering of services to accredited members is another issue. The number of accredited members is still relatively low, so the pool of people able to work at defining the required services and willing to organize them is relatively small. However, this is crucial for the long-term survival of the program.

Given that many of our services are freely available through our respective websites, and since there is a multiplication of statistical organizations throughout the world (globally organized around geography, ethnicity, or subject matter), it is important for all our organizations to work at developing a continued relevance. Tangible benefits of membership must be emphasized, but developing a strong sense of community is almost as important to our success.

I conclude by wishing you a very good International Year of Statistics. And what better way to celebrate than attending the Joint Statistical Meetings this August in my home city? *Je vous souhaite la bienvenue à Montréal!* ■

Calculus and Statistics

Daniel Kaplan, DeWitt Wallace Professor at Macalester College

Danny Kaplan is DeWitt Wallace professor at Macalester College, where he directs the applied math and statistics major. He's the author of *Statistical Modeling: A Fresh Approach* and *Start R in Calculus*.

Statistics can be introduced best when students have a solid grounding in calculus. This statement would have been mainstream 50 years ago. Nowadays it is controversial and provocative, even goading. I write it, and believe it, even though there is considerable experience to the contrary.

For at least 20 years, there has been a lively reform movement in statistics education, an improvement in pedagogy based on understanding how students perceive statistical concepts. One reform strategy is to strip away mathematical formalism that's not strictly needed, including integration and differentiation, the hallmarks of calculus. This has made statistical thinking more accessible.

A visible sign of success is the rapid growth of Advanced Placement statistics. There are important and legitimate criticisms of the AP curriculum and how it connects with more advanced statistics, but the success of the AP program is inspiring and a model to be emulated. AP statistics bootstrapped itself into high schools by providing training opportunities for high-school teachers who often had little or no statistics education themselves. Many students find the AP statistics course an attractive alternative to calculus because they see statistics as useful.

A decade ago, the Mathematical Association of America Committee on the Undergraduate Program in Mathematics worked with many

partner disciplines to see how the mathematics curriculum can better serve them. The findings, published in the CRAFTY reports, include a recommendation that students broadly be taught statistics without a calculus prerequisite.

The no-calculus form of statistics is also a pragmatic choice; that's where the students are. Nationally, the most heavily enrolled mathematics course at the college level is "college algebra," a pre-calculus course designed in almost all cases to lead to calculus, but with a success percentage in the single digits.

Even among those reaching the calculus level, attrition is high. The half-life of a student in the university-level mathematics curriculum is one course. Calculus is a filter that has become a choke-point as the economy becomes more and more technical.

This might make sense if the material learned in the traditional calculus sequence were more directly connected to success in technical careers. But, for many students, the calculus path leads to a destination of uncertain value. A student who spends a year learning techniques for symbolic differentiation and integration of functions of a single variable, along with definitions of limit and techniques for the analysis of sequences and series, by and large learns techniques that will rarely, if ever, be used by instructors in the partner disciplines and even less in their eventual careers. Statistics is often much more relevant to a student's ongoing and future work.

In thinking about the relationship between calculus and statistics, many people think first about integration and differentiation, cumulatives and



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densities, areas and slopes. One quickly realizes that calculus doesn't provide much insight. "Area" and "slope" are intuitive, elementary concepts. Indeed, much calculus pedagogy relies on areas and slopes to motivate derivatives and integrals. Beyond that, the algebraic techniques of calculus courses (e.g., $x^2 \rightarrow 2x$) don't get traction against the common distributions of statistics (e.g., the normal and t distributions).

Put aside for a moment the methods for differentiation and integration and think about the tools and language one needs to describe relationships among variables. Calculus and statistics both center on models of relationships: constructing them, analyzing them, evaluating them. In calculus, the choice to add a term to a model reflects some knowledge or hypothesis about mechanism. In statistics, choices are based on evidence provided by data. These are complementary perspectives with a shared foundation in mathematical modeling.

Traditionally, calculus instruction has emphasized functions of one variable, $y = f(x)$. In algebra and pre-calculus, students take on linear forms ($mx + b$), then quadratics ($ax^2 + bx + c$) and factoring. In calculus, they learn that $mx + b$ can be used as a local approximation to many forms of functions, while $ax^2 + bx + c$ gives a better approximation.

For statistical thinking, what's needed instead of quadratics and factoring is the incorporation of covariates. This can be as simple as the linear function with two inputs, $z = a + bx + cy$. This general-purpose form—extended often to more than two variables but remaining linear—is the workhorse of statistical modeling. It's a first representation of what might be called complexity that more than one variable can play a role.

A powerful way of thinking about functions like

$z = a + bx + cy$ is to ask how the output changes when either of the inputs, x or y , is changed. An important strategy from calculus is the partial derivative—examining the change in outcome as one input is changed while others are held constant. This aligns with experimental method in science; examining partial change and developing a formal language for describing it helps students understand that there are different ways for change to happen. In my view, understanding what's a partial change and what's not is fundamental to thinking about covariates and causation and therefore to the most compelling issues for applying statistics.

Ideally, statistical notions of fitting functions to data are taught hand in hand with the introduction of functions and their parameters in calculus. With this, and with the idea of partial change, students are better able to make mathematical sense of statistical ideas such as adjustment and how the relationship between two quantities, z and x , is informed by the participation of additional quantities.

At Macalester College, drawing on resources from NSF-sponsored Project MOSAIC, we redesigned our introduction to calculus to incorporate the CRAFTY recommendations: modeling, multiple variables, using only essential algebra, using data to inform models. Although it serves needs of all the disciplines, the primary orientation is toward statistics (even using R software for teaching calculus). In one semester of calculus, students gain experience building and interpreting models in multiple variables. They understand why it's important to consider relationships among multiple variables and learn the language to express such relationships. Then, when they move on to statistics, they can connect their models to data and

For More Information

Blair, R., E.E. Kirkman, and J.W. Maxwell. 2013. *Statistical abstract of undergraduate programs in the mathematical sciences in the United States: Fall 2010 survey*. American Mathematical Society.

Garfield, J., and D. Ben-Zvi. 2008. *Developing students' statistical reasoning: Connecting research and teaching practice*. Springer.

AP Statistics discussed in *Amstat News*, Sept./Oct./Nov. 2009, <http://magazine.amstat.org/blog/2009/11/01/statviewnov09>

The CRAFTY reports, www.maa.org/cupm/crafty

Project MOSAIC, www.mosaic-web.org
NSF DUE-0920350

examine and evaluate the extent to which the data provide evidence for their models.

The success in making elementary statistics accessible without calculus is remarkable. But it's not clear how students can move forward along this path to the sorts of statistics needed in contemporary work involving complex, real-world systems. The intellectual skills students need to advance in statistics can be supported by engaging calculus, remodeling the calculus curriculum as needed to support the description, analysis, and judgment needed in statistical work. ■

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2014 Invited Session Proposals Wanted



Jean D. Opsomer
JSM 2014 Program Chair

The 2014 Joint Statistical Meetings will be held in Boston, Massachusetts, August 2–7. As you know, the largest annual conference devoted to statistics is an event not to be missed. The theme for 2014—announced by ASA President-elect Nat Schenker—is “Statistics: Global Impact—Past, Present, and Future.” This theme seeks to emphasize, celebrate, and share information about the contributions our profession has made, currently makes, and will continue to make to important problems in the world.

The JSM 2014 Program Committee will put together the conference program. The first major step in this process is to create the invited program, which, together with the keynote and other plenary sessions, makes up the heart of the scientific portion. The invited program is composed of 161 sessions selected by the members of the program committee from among the invited session proposals submitted by the end of August. This might sound like a lot of sessions, but there are a total of 700 sessions scheduled for JSM this year.

Do you have an idea for a session? If so, I encourage you to submit a proposal. There are three types of invited sessions: papers, posters, and panels. An invited paper session consists of two to six people, including speakers and discussants, while an invited poster session typically consists of 10 to 12 participants. For an invited

panel, the session consists of three to six people who provide commentary, discussion, and engaging debate about a particular topic.

To organize a session, you should set a session theme of broad interest (connections with the JSM 2014 theme are a plus) and contact potential participants. A proposal consists of a session title, a brief abstract/rationale for the session as a whole, a list of participants, and tentative titles of talks. When planning an invited session, note that JSM has strict rules for participation, with the official guidelines at www.amstat.org/meetings/jsm/2014/guidelines.cfm. Talk to potential speakers to ensure they are not committing to more than one invited proposal.

With your proposal written, you need to contact a member of the JSM 2014 Program Committee (see www.amstat.org/meetings/jsm/2014/program.cfm) to see if they are willing to sponsor the session. If you are a member of an ASA section or another sponsoring society, going through the corresponding representative is often a good way to proceed. Alternatively, if you have a proposal that does not clearly fit any ASA sections or sponsoring society, do not hesitate to submit it to one of the general methodology chairs (for papers and panels) or the poster chair (for posters). I urge you to contact program committee members well ahead of the August deadline.

Decisions about the invited program are finalized by the end of September. With only 161 invited slots on the JSM program and growing attendance each year, the competition is increasingly severe. If you don't find success with your proposal, you can convert it to a topic-contributed session at that time or try again in the future.

Ultimately, the JSM 2014 invited program is only as good as the

Participation Guidelines

The Committee on Meetings, with members drawn from all cosponsoring societies, has put into place some guidelines to help encourage a wide and diverse set of presenters. These guidelines are as follows:

Each participant may participate in one activity from each of the following categories A–I:

A. Deliver a main presentation (one of the following):

- Present an invited paper
- Serve on an invited panel
- Present a contributed or topic-contributed paper
- Present a contributed or topic-contributed poster
- Present in a SPEED session
- Serve as a discussant, panelist, or other presenter in a topic-contributed session

B. Chair a session

C. Present an invited poster

D. Present an Introductory Overview Lecture

E. Teach a short course or workshop for the Continuing Education program

F. Lead a roundtable (A.M. or P.M.) or speak at a speaker luncheon

G. Present in a first-time invited memorial session (first time a memorial session has been submitted and designated for a particular deceased person)

H. Present in a late-breaking session

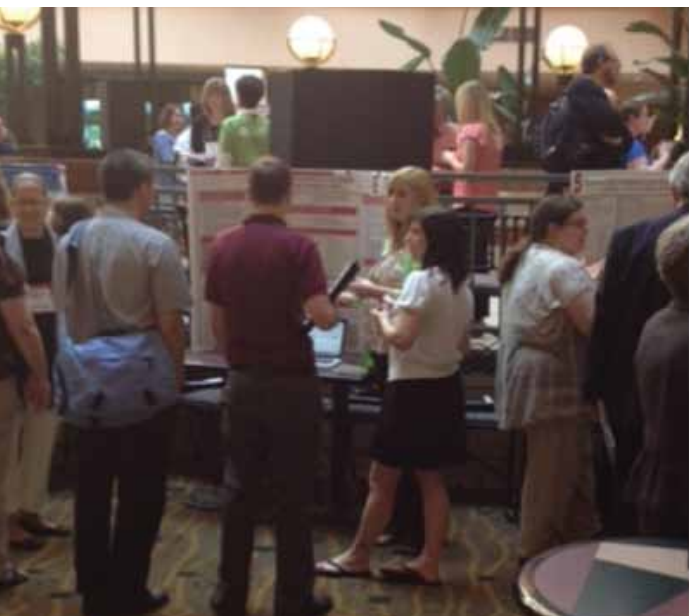
I. Serve as a discussant in an invited session

While the above guidelines allow for multiple presenting roles within the JSM program, please note that a person cannot hold multiple roles within one session. In addition, the participation rules do not preclude individuals from being co-authors of as many papers as they wish or from organizing multiple sessions. Only the JSM program chair, with ample justification, can grant any exceptions to the above rules.

quality of the submitted proposals, so your input is important. On behalf of all the members of the program committee, I thank you for your help in putting together an exciting invited program for JSM 2014. In the meantime, à bientôt à Montréal! ■

Two Undergraduates Experience USCOTS 2013

Anna Keathley and Lauren Magee



The USCOTS 2013 poster sessions allowed attendees to look around at what other schools were pursuing in the name of statistics research.

We had the honor of attending the United States Conference on Teaching Statistics (USCOTS 2013) May 16–18. Our six-hour plane flight from California to North Carolina was not only for the free bags of peanuts, it was also to support a project we have both been involved with for two years. This project, led by Anna Bargagliotti, is called Project-SET and is aimed at developing teacher-level materials to better facilitate student learning at the high-school level. Currently, our project is tackling the difficult task of testing the resources we have created to see if they are beneficial.

As first-time conference attendees, we had a lot of pre-

existing notions of how this weekend was going to transpire. We expected to sit in on numerous talks involving topics that went way over our heads and end up daydreaming about what was going to be served for our next meal. However, this was not the case at USCOTS. Either we have a much deeper comprehension of statistics than we had originally assessed or the presenters were skilled in both simplifying their subject matter and making their talks entertaining to the average viewer. We believe it was the latter.

While neither of us intend on pursuing a path strictly in statistics education, we were surprised to glean relatable information to our area of interest from the talks offered. Immediately during the opening session, we were entertained by personal narratives and able to establish an understanding that everyone in the room was coming from the same place—we all had a love for statistics.

This may have been our only similarity, because to our surprise, we were the only participants, besides the babies brought in by their parents, who did not have a bachelor's degree. It is an understatement to say we were initially intimidated. However, all the participants at USCOTS were more than friendly and actually appreciated our opinion in table discussions as we brought in a different perspective on the education system.

Unfortunately, only one of us has taken a statistics course at the college level, so the majority of our statistics knowledge stems from the AP Statistics course at our respective high schools. We both feel privileged to have had extremely passionate teachers, but after reading over the Common Core Standards, we realized the

gaps that had occurred in our elementary and secondary education. The Common Core had not been established when we were going through school, so our teachers did not have this framework to work from, which only re-instilled how important the development of an adequate standard for statistics education truly is.

Another aspect of the conference we found surprising was the focus on technology. Our generation is expected to be well-versed in all things technology, but we realized we couldn't be more unfamiliar with what is available in the field of statistics. Our math professors, and even statistics teacher, never seemed to stray beyond the graphing calculator. Chris Wild's presentation, "Using Your Laptop to Gain iNZight and ViTality: Intuitive, Free Software for Analysis and Conceptual Development," provided a new program geared toward graphing data that allowed the user to calculate the mean and other statistics, as well as graph this information in appropriate forms. We are sure many of you have endured the torture of creating a dot plot using Excel. We even made a video (<http://vimeo.com/51259015>) about it, so any program preventing that pain receives our exuberant approval.

The activities highlighted by Shonda Kuiper from Grinnell College in her talk, "Nurturing a Passion for Statistics by Finding Stories in Data," were easy to access and included simple instructions for tasks that were fun, but also related to statistics. These activities could be administered to children as young as elementary school age and give them a basis for their future statistical understanding.

While some of the technology did seem challenging, we appreciated the effort statisticians are putting into making the subject relatable to this generation. We enjoyed the poster “Learning and Facebook? Using StatCrunch Friend Data to Illustrate the Consequences of a Nonrandom Sample,” presented by Aimee Schwab, who explored using personal Facebook friends to create data.

We found that many teachers and professors are thinking outside the box to pique their students’ interest. We know social media, in particular, is such an important aspect to our generation, particularly Anna, as she spent the entire conference live tweeting quotes from the conference and was excited to win the social media award for most tweets. Her excitement was not only for the \$100 prize to Omaha Steaks, although she will be treating us to filet mignon for the next couple weeks, but also for the title. She had to beat out a lot of mad tweeters for the prize. With the growth in social media, it is clear that even statisticians who have been teaching for decades are making the effort to change their curriculum and classroom to center on these new innovations.

What remained abundantly clear throughout the conference is that statistics education reform is absolutely necessary. In our undergraduate education, we have become undeniably aware of this fact, and we are constantly surprised at how little students, even at the university level, understand statistics. Xiao-Li Meng from Harvard University explained that an integrated education model is of the utmost importance for any field of study. We are both involved with some sort of integrated education, so this is a point we find to be extremely valid.

Our specified fields of study are not the only places where

we can draw a connection. Statistics can be seen everywhere. At Harvard, even the students pursuing art-related careers are required to take a statistics class for their general education. We think this unwavering requirement should be implemented at all universities as statistics offers important insight about how to think critically about the world around you.

USCOTS included two poster sessions during which we were allowed to browse and talk to presenters one-on-one about their projects. It was during this time that we were able to look around at what other schools, domestically and internationally, were pursuing in the name of statistics research. The posters “Statistical Treasure Hunt: An Outdoor Game Activity to Enhance Student Engagement and Motivation” and “The Pepsi Challenge in the Statistics Classroom” taught us an exciting way to engage students.

One of the posters involved sending students at the undergraduate level on a treasure hunt during which they had to stop at specific checkpoints and answer statistical questions correctly before moving on. The activity was done at an unknown location and it forced students on the same team to work together if they wanted to reach the eventual end.

The Pepsi Challenge asked students to try three cups of liquid. Each cup contained either Pepsi or Coke, with two of the cups containing the same type and the third being different. The objective was to identify which cup was different. Anna was able to identify the difference rather quickly, but Lauren struggled a bit and ended up giving an inaccurate identification. She still maintains that her cups must have been labeled incorrectly.

While this conference is created for professionals, we found

there was actually a lot to take away as undergraduate students. We learned how applicable statistics topics can be to our specific fields of study and, even more importantly, we learned that we will never tire of statistics song parodies, a favorite being “Hit Me With Your Best Plot” (thank you Lawrence Lesser).

We both feel humbled and honored that we were given the opportunity to come to USCOTS and be surrounded by such talented educators. During not only the presentations, but also discussions at the dinner table, we absorbed valuable advice about life. Anna, an aspiring high-school mathematics teacher, was able to hear from current teachers about their experiences, struggles, and accolades. And Lauren, geared toward human genetics research, was able to apply the innovation, creativity, and integration of different educational outlets to her future career. ■



Revising the Undergraduate Major in **STATISTICS**

It has been more than a decade since the American Statistical Association (ASA) approved a set of curriculum guidelines (www.amstat.org/education/curriculumguidelines.cfm) for undergraduate statistics programs. Since that time, much has changed. The “Age of Big Data” arrived. Interest in the AP Statistics program flourished. The number of people receiving undergraduate degrees in statistics increased dramatically. New tools became available for statisticians. It is a good time to rethink the undergraduate curriculum.

President-elect Nathaniel Schenker has appointed a working group consisting of representatives from academia, industry, and government to make recommendations for changes in the guidelines.

The working group welcomes your input. In addition to the survey form on the website, we will host a meeting at the following upcoming conference to solicit feedback:

Joint Statistical Meetings (Montréal, Canada): The working group will have an open meeting from 4–5 p.m. on Wednesday, August 7, in CC-515B.

Feedback also can be sent to the working group chair, Nicholas Horton, at nhorton@amherst.edu.

Curriculum Guidelines for Undergraduate Programs in Statistical Science (approved 2000)

The American Statistical Association endorses the value of undergraduate programs in statistical science for both statistical science majors and students in other majors seeking a minor or concentration. Following are guidelines for development of curricula for such programs.

Principles

Undergraduate programs in statistics are intended to equip students with quantitative skills that they can employ and build on in flexible ways. Some students will plan graduate work in statistics or other fields, while others will seek employment after their first degree. Programs should be sufficiently flexible to accommodate varying goals. Undergraduate programs are not intended to train professional statisticians, though some graduates may reach this level through work experience and/or further study.

Institutions vary in the type and intensity of programs they offer. The ASA believes almost all institutions can provide a level of statistical education that is useful to both students and employers. We encourage flexibility in adapting these guidelines to institutional constraints. In many cases, statistics minors or concentrations for quantitatively oriented students in fields such as biology, business, and behavioral and social science may be more feasible than a full statistics major.

Undergraduate statistics programs should emphasize concepts and tools for working with data and provide experience in designing data collection and analyzing real data that goes beyond a first course in statistical methods. The detailed statistical content may vary and be accompanied by varying levels of study in computing, mathematics, and a field of application.

Though statistics requires mathematics for the development of its underlying theory, statistics is distinct from mathematics and uses many non-mathematical skills; thus, the curriculum must be more than a sequence of mathematics courses. It is essential that faculty trained in statistics and experienced in working with data be involved in developing statistics programs and teaching or supervising courses required by the programs.

Skills Needed

Effective statisticians at any level display a combination of skills that are not exclusively mathematical. Programs should provide background in the following areas:

Statistical - Graduates should have training and experience in statistical reasoning, design of studies (including practical aspects), exploratory analysis of data by graphical and other means, and a variety of formal inference procedures.

Mathematical - Undergraduate major programs should include study of probability and statistical theory, along with the prerequisite mathematics, especially calculus and linear algebra. Programs for nonmajors may require less study of mathematics. Programs preparing for graduate work may require additional mathematics.

Computational - Working with data requires more than basic computing skills. Programs should require familiarity with a standard statistical software package and encourage study of data management and algorithmic problemsolving.

Nonmathematical - Graduates should be expected to write clearly and speak fluently. They also should have developed skills in collaboration, teamwork, and organizing and managing projects.

Substantive - Because statistics is a methodological discipline, statistics programs should include some depth in an area of application.

Curriculum Topics for Undergraduate Degrees in Statistical Science

The approach to teaching the following topics should:

1. Emphasize real data and authentic applications
2. Present data in a context that is both meaningful to students and indicative of the science behind the data
3. Include experience with statistical computing
4. Encourage synthesis of theory, methods, and applications
5. Offer frequent opportunities to develop communication skills

Statistical Topics

1. Statistical theory (e.g., distributions of random variables, point and interval estimation, hypothesis testing, Bayesian methods)
2. Graphical data analysis methods
3. Statistical modeling (e.g., simple, multiple, and logistic regression; categorical data; diagnostics; data mining)
4. Design of studies (e.g., random assignment, replication, blocking, analysis of variance, fixed and random effects, diagnostics in experiments; random sampling, stratification in sample surveys; data exploration in observational studies)

Mathematical Topics

1. Calculus (integration and differentiation) through multivariable calculus
2. Applied linear algebra (emphasis on matrix manipulations, linear transformations, projections in Euclidean space, eigenvalue/eigenvector decomposition, and singular-value decomposition)

Probability

1. Emphasis on connections between concepts and their applications in statistics

Computational Topics

1. Programming concepts; database concepts and technology
2. Professional statistical software appropriate for a variety of tasks

Nonmathematical Topics

1. Effective technical writing and presentation
2. Teamwork and collaboration
3. Planning for data collection
4. Data management

Electives - There are many electives that might be included in a statistics major. As resources will vary among institutions, the identification of what will be offered is left to the discretion of individual units.

Practice - When possible, the undergraduate experience should include an internship, senior-level "capstone" course, consulting experience, or a combination. These and other opportunities to practice statistics should be included in a variety of venues in an undergraduate program.

Curriculum Topics for Minors or Concentrations in Statistical Science

The core of a minor or concentration in statistics should consist of the following:

- General statistical methodology (statistical thinking, descriptive, estimation, testing, etc.)
- Statistical modeling (simple and multiple regression, diagnostics, etc.)
- Exposure to professional statistical software

The number of credit hours for minors or concentrations will depend on the policies set by the academic units involved. Additional topics to complete the required number of credit hours could be chosen from a nonexhaustive list (e.g., mathematical statistics, design of experiments, categorical data analysis, time series, Bayesian methods, probability, database management, a capstone experience). Courses from other departments with significant statistical content might be allowed to count toward a statistics minor or concentration, though the content of such courses must differ substantially.

Lester R. Curtin Award

Provides Registration and Travel Support to the ASA Conference on Statistical Practice



Lester (Randy) Curtin, December 2009

The Lester R. Curtin Award was established recently to help promising young health statisticians get the skills and training they need to make significant contributions in their area of study. The award was created to honor the memory of Lester, or “Randy,” and his long career of working tirelessly to teach and mentor his colleagues at the Centers for Disease Control and Prevention’s (CDC) National Center for Health Statistics (NCHS).

Randy was a 38-year ASA member, an ASA Fellow, and a recognized expert for his work on childhood growth charts, longitudinal studies, standardized statistical software, vital statistics, and the design of complex sample health surveys.

“Randy was overly generous with his time to mentor and teach,” said Lew Berman, who worked with Randy for more than 10 years on the National Children’s Study. “He always had a thoughtful comment to make and was able to see things that others could not.”

Nat Schenker, a statistical colleague who co-authored with Randy, said “Randy was a smart and fun guy, with whom I always enjoyed discussing applied statistical problems. He was terrific at explaining complex issues in understandable ways, which I’m sure was one reason he was such an effective mentor and teacher.” Schenker went on to say that Randy had great intuition, experience, and wisdom with regard to statistical practice. “So this new award involving the conference on statistical practice is a wonderful tribute to his memory.”

In the spirit of Randy’s service, the award is funded through an endowment established by his wife, Sally. Although she never worked directly with Randy, she met him in 1989 when they both worked at the NCHS. She had a statistical problem she couldn’t solve and someone recommended she ask Randy. “They told me he had a beautiful, mathematical mind,” she said. “So, I met Randy doing what he did best—helping people with statistical problems.”

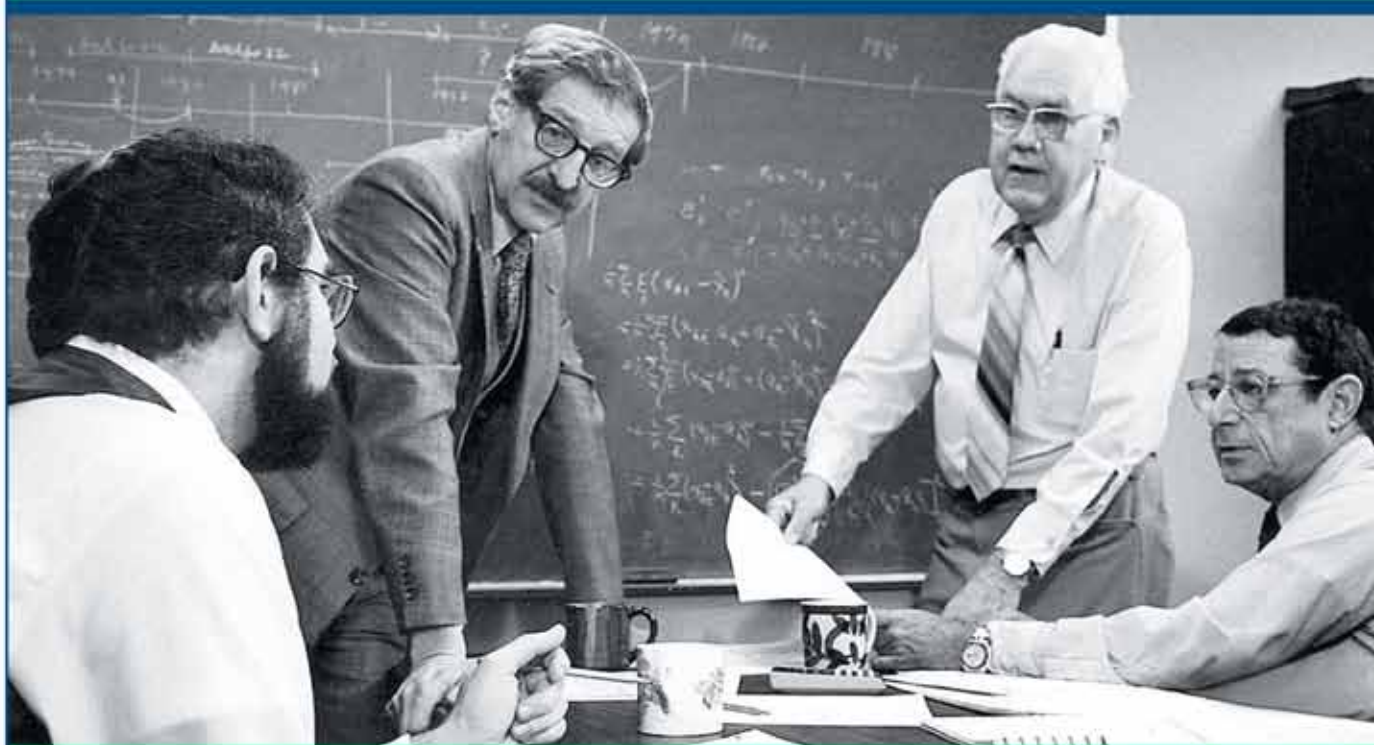
The award will provide registration and travel support to the ASA Conference on Statistical Practice, which takes place every February. To be eligible for the \$1,000 award, applicants must work in the field of health statistics (broadly defined as either applied, including public health policy, or clinical work) or in a graduate program to prepare for such work. Preference will be given to those who have been working in the field for five or fewer years, or who are still in graduate school.

Submissions should include two letters of recommendation, a curriculum vitae, and a statement of no more than 500 words explaining the applicant’s career goals, what they hope to learn by attending the conference, and how they plan to contribute to real-world applications of statistics in their field. Past chairs from the Health Policy Statistics, Survey Research Methods, Biopharmaceutical, Teaching Statistics in the Health Sciences, Mental Health Statistics, Statistics in Epidemiology, and Biometrics sections will select the award winner.

Send submissions by October 15 to Lynn Palmer, the ASA’s director of programs, at palmer@amstat.org. The winner will be announced by December 1. ■

50 years

*Improving lives
through research*



Senior Statisticians, 1980s

Left to right: David Morganstein,
Joseph Waksberg, Morris Hansen,
Harold Nisselson

In 1963, three statisticians from the University of Wyoming created a new statistical services company, Westat. Now, 50 years later, Westat is one of the foremost professional service corporations of its kind, conducting high-quality studies on a range of issues that help our clients meet the Nation's biggest challenges.

www.westat.com

Chapters Judge Michigan Science Fair

Karry Roberts, DC-ASA Secretary



The team of 11 judges includes (from left) Lance Heilbrun, Bern DeBacker, Rob Kushler, Bob Thomas, Huiyong Zheng, John Gillespie, Geoffrey Fell, Anamaria Kazanis, Ellen Barnes, and Karry Roberts. Not pictured is Alfred Hero.

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

Enjoying another year in a long-standing tradition as a joint special awards team at the Southeast Michigan Science Fair, the Detroit and Ann Arbor chapters judged projects on March 8. The purpose was to recognize and encourage the students' incorporation of statistical methods in their science projects.

The fair, which took place at Washtenaw Community College in Ann Arbor, Michigan, included 193 projects in the middle-school and 143 projects in the high-school divisions. To thoroughly review all 336 projects, the judges each selected a zone of the fair, reviewed all projects in that zone

individually, and found projects worthy of the awards at the recognition and merit levels. They then developed a list of potential awards of excellence to share with their team and the entire group reviewed the best-of-the-best projects list.

This year, the team gave out 44 certificates of recognition for use of statistical principles and/or analysis, three certificates of merit for more detailed use of statistical methods, and three awards of excellence for outstanding use of statistical methods. Those receiving the awards of excellence received a special certificate and statistical book autographed by all the judges.

At the middle-school level, the judges gave their award of excellence to a student from Chelsea in the Experiment Physical Sciences category for "S.T.E.M. With a Cookie," which used design of experiments.

At the high-school level, two students with a project in the Teams category received the award of excellence for their project, "Breast Cancer Drug Responsive Predictions Based on RNA Expression Signature." This project exhibited impressive use of statistics on a complex topic. The students were from Huron High School and Community High School, both in Ann Arbor, Michigan. ■

Central Indiana Chapter Rocks with Brad Carlin, Bayes

Katie Lane, Central Indiana Chapter Secretary, and Eric Sampson, ASA Journals Manager

It's certainly no ordinary short course when the "Paul Shaffer of Bayesian statistics" is in the house and calling the tunes. Sure, Brad Carlin is Mayo Professor in Public Health and professor and head of the division of biostatistics at the University of Minnesota, but he is also a musician and band leader who brings a performer's sense of timing to his courses. While the tempo can be fast, Carlin makes sure to hit every note along the way.

For members of the Central Indiana Chapter, the feature act was Carlin's short course, "Bayesian Methods for Data Analysis, Meta-Analysis, and Adaptive Trials," part of the ASA's Council of Chapters Traveling Courses (www.amstat.org/education/travelingcourses). The course was held May 17 at the Lilly Corporate Center in Indianapolis, Indiana.

"When the going gets rough, the rough go Bayesian," Carlin said. "It's not that the classical approach is wrong, but it is, let's say, limited in scope!"

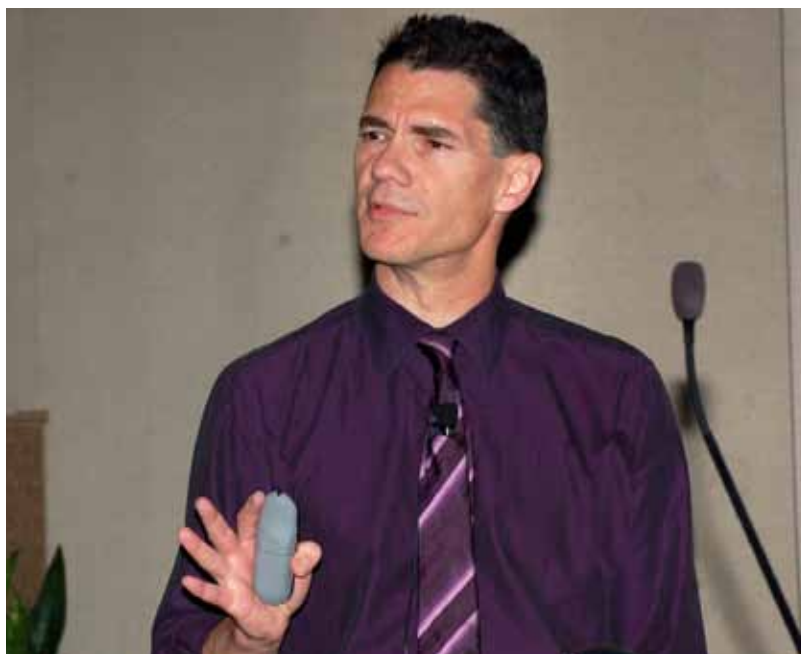
Biostatisticians in the drug and medical device fields are often faced with data that are highly multivariate, temporally correlated, costly, and difficult to obtain. Bayesian methods, however, are well suited to these types of data, as they help combine a lot of information in naturally hierarchical ways. Advances in computing and Markov chain Monte Carlo (MCMC) methods help researchers conduct safety and efficacy studies, equivalence studies, and meta-analyses. They also help create hierarchical models that account for all sources of uncertainty. In addition, regulatory agencies are starting to encourage hierarchical Bayesian approaches, making these methods an important tool in the analyst's bag.

Carlin continued with a quick, but thorough, primer on Bayesian inference and computation, followed by several examples using R and WinBUGS to perform analyses.

The second half of the short course covered the basics of Bayesian clinical trial design, Bayesian adaptive methods (particularly important to statisticians working on clinical trials), and Bayesian meta-analysis.

Chapter members in attendance said the course was well organized and Carlin was a great speaker, keeping the audience engaged until the end. For those who have limited background in Bayesian statistics, Carlin provided a good contrast on the difference between frequentist and Bayesian philosophies.

Tuan Nguyen, president of the Central Indiana Chapter, said, "Carlin provided a great overview as



Brad Carlin, Mayo Professor in Public Health, engages members of the ASA's Indiana Chapter.

well as a refreshing perspective on the theory and applications of Bayesian statistics with particular motivating examples in clinical trial research. It is encouraging to hear that the FDA is more open to the use of Bayesian statistical approaches. For applied statisticians, these short courses provide a good review of the rigorous training acquired in graduate school as well as novel applications pertinent to their work."

Ed Brizendine (past president of the chapter) said, "These traveling courses offered by the ASA are a great value and service to the local chapters. They allow for chapters to host nationally known statisticians who speak on current and relevant topics."

A number of chapter officers pitched in to make the short course a reality. In addition to Nguyen and Brizendine, Sameera Wijayawardana (chapter representative), Peipei Shi (treasurer), Katie Lane (secretary), Zhangsheng Yu (past president), and Huiping Xu (vice president) all assisted in organizing the course.

For more Bayesian-inspired tunes recorded by Carlin and his intrepid band, visit YouTube and watch the video "Bayesian Cabaret, What I Like About You" at www.youtube.com/watch?v=VzWsbpLnsK0. Oh what a prior! ■

The department of biostatistics in the Harvard School of Public Health has named **Nilanjan Chatterjee**, senior investigator and chief of the biostatistics branch of the National Cancer Institute, Division of Cancer Epidemiology and Genetics, as the 2013 Myrto Lefkopoulou Distinguished Lecturer.

Chatterjee will present a lecture, titled “Genetic Architecture of Complex Diseases: Implications for Discovery, Prediction, and Prevention,” on September 19 at the Harvard School of Public Health.

The lectureship was established in perpetuity in memory of Myrto Lefkopoulou, a faculty member and graduate of the Harvard School of Public Health. Lefkopoulou died of cancer in 1992 at the age of 34 after a courageous two-year battle. She was deeply beloved by friends, students, and faculty.



John C. Haltiwanger

Each year, the lectureship is awarded to a promising statistician who has made contributions to either collaborative or methodologic research in the applications of statistical methods to biology or medicine and/or has shown excellence in the teaching of biostatistics. Ordinarily, the lectureship is given to a statistician within 15 years of earning a doctorate.

Nominations for next year's lectureship are welcome and should be sent to the Myrto Lefkopoulou Lecture Committee, Department of Biostatistics, Harvard School of Public Health,



Maurine Haver

655 Huntington Ave., Boston, MA 02115. Nominations should include a letter of nomination and a CV and be sent by March 31, 2014. ■

John C. Haltiwanger, distinguished university professor of economics at the University of Maryland, and **Maurine Haver**, president and founder of Haver Analytics Inc., have been selected to receive the 2013 Julius Shiskin Memorial Award for Economic Statistics. The award recognizes unusually original and important contributions in the development of economic statistics or in the use of statistics in interpreting the economy.

Both Haltiwanger and Haver are recognized for initiatives to educate users and producers of key federal economic statistics. Haltiwanger is also recognized for expanding access to Census Bureau microdata records and using these records to develop new statistical measures to analyze firm-level employment dynamics and productivity. Haver is also recognized for work with statistical agencies to improve the availability of meta-data and for her leadership of business economists to support adequate funding for economic statistics programs.

Haltiwanger and Haver are the 40th and 41st recipients of the award; they will be honored at events hosted by the Washington Statistical Society, National Association

ASA Member Wins Prestigious Shaw Prize

David L. Donoho, ASA member and Anne T. and Robert M. Bass Professor of the Humanities and Sciences at Stanford University, was named the recipient of the 2013 Shaw Prize in Mathematical Sciences.

The Shaw Prize honors individuals who have achieved significant breakthrough in academic and scientific research or applications and whose work has resulted in a positive and profound impact on humanity.

Donoho was recognized for his profound contributions to modern mathematical statistics, particularly the development of optimal algorithms for statistical estimation in the presence of noise and efficient techniques for sparse representation and recovery in large data sets.

The prize, established by the film producer Run Run Shaw, honors individuals in three categories—astronomy, mathematical sciences, and life science and medicine. Each winner receives \$1 million.

A philanthropist, Shaw has created several trusts and foundations to promote education, scientific and technological research, medical and welfare services, and culture and the arts.

This will be the 10th year the Shaw Prize has been awarded. The presentation ceremony will be held September 23. To read more about the Shaw Prize, visit the foundation's website at <http://bit.ly/16zU4Ao>.



Nagaraj K. Neerchal

for Business Economics, and Business and Economics Section of the American Statistical Association.

To read about the life and work of both Haltiwanger and Haver, visit *Amstat News* online at www.magazine.org. ■

Nagaraj K. Neerchal, from the University of Maryland, Baltimore County (UMBC), received the 2013 University System of Maryland Board of Regents' Award for Innovation Excellence-Academic Transformation in Teaching.

Since becoming chair of UMBC's department of mathematics and statistics, Neerchal has developed a reputation for being a pioneer for educational and administrative initiatives. The department he leads provides foundational courses for undergraduates, and his innovative approaches have been crucial to maintaining excellence in education. His development of the Quiz Zero initiative—a complex assessment of a student's preparedness for a particular math course—improved student success in foundational math courses.

Neerchal also led the department in the creation of hybrid learning material for statistics courses, combining the resource-efficient elements of online instruction with face-to-face instruction. The development of these projects

facilitated greater faculty interaction with students.

Neerchal earned his PhD in statistics from Iowa State University under the guidance of Wayne A. Fuller. His interests are modeling and analysis of correlated observations. In 2000, he received the Distinguished Achievement Award and Medal from the American Statistical Association's Section on Statistics and the Environment. He was elected Fellow of the American Statistical Association in 2010. ■

A National Medal of Science winner, **Calyampudi R. Rao**, received his 37th honorary doctorate degree from the State University of New York during the university's 167th commencement on May 12.

Rao is considered a world leader in statistics, whose achievements have had a profound impact on a wide range of fields over the past seven decades, among them engineering, biostatistics, economics, genetics, medicine, and anthropology. A recognized scholar, Rao is a member of the National Academies of Science, Indian National Science Academy, and Royal Society (UK Academy of Sciences).

The former director of the Indian Statistical Institute and Eberly Professor Emeritus of Statistics at Pennsylvania University, Rao spends part of the year with family in Western New York and has consequently developed a relationship with several University at Buffalo faculty members.

For more information about the commencement, visit <http://bit.ly/15DoaCx>. ■

Obituary

William Charles Hoffman

William Hoffman passed away on January 16, 2013. Born in 1919 in Portland, Oregon, Hoffman graduated from Lincoln High School, where he received the T.T Davis Award for outstanding scholar.

He graduated with a mathematics degree and earned his PhD in mathematics and statistics in 1953 from the University of California at Berkeley. His first job was in the Radio Propagation Division of the U.S. Navy Electronics Laboratory. He then worked at the Rand Corporation, Hughes Research Laboratories, and the ONR Probability Project at Cornell University.

In the early 1960s, Hoffman joined the staff at Boeing Scientific Research Laboratories, and, from there, followed his interest in pattern recognition, which he developed while attending the XIVth General Assembly of the International Scientific Radio Union in Tokyo as an official U.S. delegate. He eventually changed his area of research to mathematical psychology.

In 1966, Hoffman published his research on the lie transformation group of neuropsychology, which was his trademark. It wasn't until 1985 that he went to work at New Mexico State University and later became the principal senior scientist at DynCorp in Sierra Vista, Arizona.

Hoffman was internationally known for his work in mathematical psychology, radio propagation, and statistical methodology for radio wave propagation. He published more than 60 research papers and books, and his final article, "Progress in Biophysics and Molecular Biology," appeared in the journal *Mathematics for BioMatics*.

sectionnews

Biometrics

The Biometrics Section is sponsoring the following six Continuing Education (CE) courses and six invited sessions at the 2013 Joint Statistical Meetings in Montréal, Québec, Canada.

CE Courses

- Statistical Methods in Genetic Association Studies, taught by Danyu Lin of The University of North Carolina
- Personalized Medicine and Dynamic Treatment Regimes, taught by Michael Kosorok of The University of North Carolina and Eric Labler of North Carolina State University
- Analysis of Interval-Censored Survival Data, taught by Philip Hougaard of Lundbeck
- Statistical Methods for Medical Imaging Analysis, taught by Hongtu Zhu and Haipeng Shen of The University of North Carolina
- Statistical Evaluation of Prognostic Biomarkers, taught by Patrick J. Heagerty and Paramita Saha-Chaudhuri of the University of Washington and Duke University
- Practical Software Engineering for Statisticians (co-sponsored with Section on Statistical Computing), taught by Murray Stokely of Google

Invited Sessions

- Current Statistical Issues in Comparative Effectiveness Research, organized by Haibo Zhou of The University of North Carolina
- Dynamic Treatment Regimes and Adaptive Designs Toward Personalized Health Care, organized by Lu Wang of the University of Michigan
- Emerging Statistical Methods for Big Data, organized by Ping Ma of the University of Illinois at Urbana-Champaign
- Frontiers in Longitudinal and Survival Data Analysis, organized by Gang Li of the University of California at Los Angeles
- Big Data, Big Impact When Statistics Matter, organized by Ching-Ti Liu of Boston University
- Questions in Cancer Research: What Are the Most Pressing Statistical Problems?, organized by Michelle Dunn of the National Cancer Institute

For information about JSM 2013, visit www.amstat.org/meetings/jsm/2013.

Awards Competitions

The section also sponsored the 2013 David P. Byar Young Investigator Award and travel awards competitions. Through a comprehensive review process, the committee chose five travel award winners in addition to the Byar Award winner, **Kyu Ha Lee** of the Harvard School of Public Health, for “Bayesian Semiparametric Analysis of Semi-Competing Risks Data: Estimating Readmission Rates Among Pancreatic Cancer Patients.”

Travel awards went to the following:

- **Noorie Hyun** of The University of North Carolina at Chapel Hill for “Threshold-Dependent Proportional Hazards Model for Current Status Data with Biomarker Subject to Measurement Error”
- **Denis Agniel** of the Harvard School of Public Health for “Identifying Multiple Regulation in Semiparametric Regression Models”
- **Xinyi Lin** of the Harvard School of Public Health for “Tests for Interactions Between a Genetic Marker Set and Environment on Generalized Linear Models”
- **Jesse Yenchih Hsu** of the University of Pennsylvania for “Calibrating Sensitivity Analysis to Observed Covariates in Observational Studies”
- **Arend Voorman** of the University of Washington for “Graph Estimation with Joint Additive Models”

Lee will receive a \$1,500 award, while the travel award winners will each receive \$800 toward costs to present their papers at JSM 2013.

Meet the winners of these awards at the section’s mixer and business meeting August 5 from 5:30 p.m. to 7:00 p.m. The mixer is open to all JSM attendees.

JSM 2014

The section also is preparing for next year’s JSM in Boston, Massachusetts. Anyone interested in organizing an invited session or who has ideas for one should contact the section’s 2014 program chair, Jonathan Schildcrout, at jonathan.schildcrout@vanderbilt.edu.

A typical invited session consists of three 30-minute talks followed by a 10-minute invited discussion and 10 minutes of floor discussion. However, other formats are possible. The 2013 program is a good source for examples.

Remember, the most mature ideas will have an advantage when competing for the limited number of slots, so it's best to have your ideas in final form by the middle of June. The Biometrics Section will have at least four invited sessions, but if we generate enough good ideas, we will be able to compete for additional slots as well.

Please also submit ideas for short courses to the section's 2013–2014 Continuing Education chair, Donglin Zeng, at dzeng@email.unc.edu.

Visit the Biometrics Section website at www.biorxiv.org/Biometrics for the latest news.

Physical and Engineering Sciences

Robert Wilkinson, SPES Representative, and Jim Wisnowski, Fall Technical Conference General Conference Chair

The Fall Technical Conference will take place October 17–18 in San Antonio, Texas, and consist of sessions covering a range of topics based on the theme “Spurring Innovation,” including statistical process control, reliability, and applied statistics. John Sall, executive vice president and co-founder of SAS is the keynote speaker, and ASA President Marie Davidian will give a talk during lunch.

Additionally, there will be a luncheon tribute to George Box and a celebration of Stu Hunter's 90th birthday, with a special session on Hunter's contributions to statistics. There is also a *Technometrics* invited session on screening strategies when interactions are present and panel discussions on the current and future state of industrial statistics and successful experimental planning. The talks will cover a range of topics, including dimensional analysis, accelerated testing, big data, and health care quality.

Following are a list of one-day short courses offered on October 16:

- Methods for Designing and Analyzing Mixture Experiments
- Introduction to Text Mining and Natural Language Processing
- Experiments for Reliability Achievement
- New Methods for Design of Experiments and How to Use Them

The conference hotel, Hyatt Regency, is located in the heart of the famous Riverwalk. The Alamo is a short walk away, along with hundreds of world-class dining and entertainment options. A block of rooms is available at the special conference rate through September 26. For information about the program, hotel, short courses, and San Antonio, visit the conference website at <http://cba.ua.edu/fic2013>.

SPES Activities in Montréal

Stephanie P. DeHart, SPES JSM Program Chair

At this year's Joint Statistical Meetings in Montréal, SPES is the primary sponsor of three invited sessions, four topic-contributed sessions, six contributed sessions, one contributed poster session, and four roundtable discussions. SPES also is co-sponsoring several sessions, including “A Celebration of J. Stuart Hunter's Contributions to *Technometrics* and Statistics” on Tuesday at 2 p.m.

Also, the joint business meeting/mixer of SPES and the ASA's Quality and Productivity Section will be held Tuesday evening. This is an opportunity to meet section officers, hear the latest section news, congratulate winners of the best paper and best posters from JSM2012, eat, drink, and enjoy one another's company. Door prizes will be given. If your organization wishes to donate door prizes for the mixer, contact Liz Schiferl at Elizabeth.Schiferl@lubrizol.com.

SPES topic-contributed sessions include the following:

August 4, 2:00 p.m.

Computer Models in Environmental Research

Organizer: Pritam Ranjan, Acadia University

Speakers: Stephan Sain, Joslin Goh, Michael Dowd, Matthew Pratola, and William Welch (discussant)

August 6, 8:30 a.m.

International Perspectives in Advanced Methodologies for Spatiotemporal Information Processing

Organizers: Alexander Kolovos, SpaceTimeWorks LLC, and Andreas Langousis, University of Patras

Speakers: Hannes Kazianka, Pavel Chernyavskiy, Emilio Porcu, Hwa-Lung Yum, and George Christakos (discussant)

August 7, 8:30 a.m.

Statistical Practice: Challenges Encountered in Government and Industrial Applications

Organizer: Ananda Sen, University of Michigan

Speakers: Willis Jensen, Arthur Fries, Joanne Wendelberger, Winson Taam, and Vipin Arora

August 8, 10:30 a.m.

Highlights from the Conference on Data Analysis (Speakers in this session presented posters at the Conference on Data Analysis, cnls.lanl.gov/coda, which was sponsored in part by SPES.)

Organizer: Kary Myers, Los Alamos National Laboratory

Speakers: Bryan Stanfill, Michael Luvalle, Emily Casleton, David Robinson, and Amy Hoeksema

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

SPES invited session details can be found in the June issue of *Amstat News*, and the complete online program is available at www.amstat.org/meetings/jsm/2013/onlineprogram. For detailed section news, visit <http://magazine.amstat.org/?cat=17>.

Statistics in Epidemiology

The Statistics in Epidemiology (SIE) Section invites all ASA members and their families to the SIE awards reception, where the 2013 Nathan Mantel Lifetime Achievement Award and young investigator awards will be presented.

The reception will take place at the Joint Statistical Meetings in Montréal, Québec, on August 5 from 6:30 p.m. to 8:00 p.m. in the Palais des congrès de Montréal (convention center), Room CC-516b. The awards ceremony will begin shortly after 6:30 and be followed by a reception and open section business meeting for those who wish to participate.

2013 Nathan Mantel Lifetime Achievement Award Winner

The section is proud to present James M. Robins of Harvard University with the 2013 Nathan Mantel Lifetime Achievement Award for his lifetime contributions at the intersection of statistical science and epidemiology.

2013 Young Investigator Award Winners

The section also is proud to present the 2013 young investigator awards to **Zijian Guo** of the Wharton School, University of Pennsylvania; **Qianchuan He** of Fred Hutchinson Cancer Research Center; **D. Leann Long** of The University of North Carolina at Chapel Hill; **Fan Yang** of the Wharton School, University of Pennsylvania; and **Jing Zhang** of the University of Minnesota.

Survey Research Methods

John Finamore, SRMS Publications Officer

As stated in the charter for the Survey Research Methods Section (SRMS), the annual business meeting shall be held in connection with the annual meeting of the American Statistical Association. The business meeting is open to all section members and will be held August 7 at 6 p.m. in the convention center, Room CC-516c.

For those who have attended past business meetings, you should expect the same jolly good time. Here are some topics you can expect to be included on the agenda:

- Introduction of current and incoming officers
- Update on current SRMS activities

- Announcement of student paper and student travel award winners
- Updates from SRMS officers, including the SRMS treasurer and education officer
- Overview of SRMS involvement at JSM 2013, including the sponsored sessions, roundtables, and Continuing Education courses
- Preliminary discussions of JSM 2014 plans
- Updates and requests for input from the Council of Sections representatives
- New business

In addition, light refreshments will be provided. Questions may be directed to SRMS Chair Jill Montaquila at JillMontaquila@westat.com.

The section is the main sponsor of more than 40 sessions, including five invited sessions, 18 topic-contributed sessions, 16 contributed sessions, one contributed poster session, and two SPEED sessions. When you consider the sponsorship of all these sessions, it translates into one or two SRMS-sponsored sessions per available time slot throughout the conference.

The SRMS-sponsored sessions, in their entirety, provide information about topics covering the full survey cycle, from sampling strategies for the rare and hard-to-reach population to coding, editing, and other post-data collection processing to inference and variance estimation with complex survey data.

For a full listing of all SRMS-sponsored sessions, visit the JSM 2013 online program at <http://amstat.org/meetings/jsm/2013/onlineprogram>. Go to the “search by sponsor” drop-down menu and click on Section on Survey Research Methods.

If you want to try something entirely new, you should try one of the two SPEED sessions SRMS is sponsoring. A SPEED session will consist of 20 oral presentations of approximately five minutes, with a 10-minute break after the first set of 10 talks. These short oral presentations will be followed by a poster session later that day. The SPEED session topics are statistical challenges with measurement, complex design, and missing data parts 1 and 2. Both SPEED sessions will take place August 7, the first at 8:30 a.m. and the second at 10:30 a.m.

For detailed section news, visit <http://magazine.amstat.org/?cat=17>. ■

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

Florida

■ University of Miami Cancer Center, biostatistics division, is seeking a scientist (biostatistician) with PhD in biostatistics/statistics. Minimum 10 years of experience required. Work in planning biomedical research studies and analyzing data, including clinical trials, laboratory investigations, and epidemiologic studies; knowledge of modern statistical computing methods, SAS and R; survival analysis, logistic regression, mixed models, repeated measures analysis, multivariate regression methods. Applicant must apply at www.careers.med.miami.edu. EOE.

Maryland

■ Clinical Trials & Surveys Corp. (C-TASC). Recent PhD-level statistician shall provide statistical expertise in

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

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

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

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

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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.

International Conference on

Health Policy Statistics

Chicago, Illinois • October 9-11, 2013

The International Conference on Health Policy Statistics (ICHPS) will focus on creating interfaces between methodologists and sophisticated health service researchers, health economists, and policy analysts so they can exchange and build on ideas they will disseminate to the broader health policy community.



See www.amstat.org/meetings/ichps/2013 for details.

Early registration ends August 30, 2013

Organized by the Health Policy Statistics Section of the ASA

the areas of: clinical trial protocol and procedure manual development, database management, data quality control, data quality assurance, and analysis plans. May also contribute to the proper use of statistical methodologies, collaborate w/investigators to complete joint scientific reports/publications, oversee data collection procedures and assist in proposal preparation. Email ksmith@c-tasc.com. EOE.

New York

■ The department of biostatistics and computational biology at the Dana-Farber Cancer Institute is conducting a search for an experienced master's-level biostatistician. The ideal candidate will collaborate with medical and scientific researchers in the design, analysis, and publication of international clinical trials in breast cancer and in multiple projects in clinical quality improvement research in oncology. For more information, visit www.Click2Apply.net/2v25wyb. AA/EOE. ■



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The incumbent should have:

- Knowledge of and experience with the drug development and regulatory review processes
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- A history of leading innovative change
- Ability to build consensus within a complex organization
- Experience developing clear processes and metrics for assessing progress
- Ability to coordinate medical and biometric research and operating programs to collect and evaluate information on drug usage, adverse reactions, poisonings, safety, quality, efficacy, and socioeconomic implications of drugs
- Ability to review and evaluate research and developmental results, research needs, and regulatory requirements, on a continuing basis for program adjustments to meet Center needs and priorities
- Ability to coordinate biometric programs with the regulatory programs of the agency
- Ability to direct/supervise a budgeted staff of approximately 25 employees, including scientific, professional, technical, administrative, and clerical support personnel assigned to the Division, ranging in levels from senior executive to entry levels
- Ability to serve as an expert advisor in his/her specialty during the initiation and formulation of regulatory programs and regulations
- Ability to provide expert consultation and advice on epidemiology and biometrics to other Centers in FDA, to other Government agencies, and to international organizations

GENERAL INFORMATION: Positions will be filled as General Schedule Appointments. Candidates for this position must be U.S. citizens. Salary range is \$123,758 to \$155,500 per annum. Relocation costs will be considered.

Basic Requirements: Degree: Ph. D in statistics or epidemiology from a school in the United States or Canada approved by a recognized accrediting body in the year of the applicant's graduation. [A Doctor of Medicine or equivalent degree from a foreign medical school that provided education and medical knowledge substantially equivalent to accredited schools in the United States may be demonstrated by permanent certification by the Educational Commission for Foreign Medical Graduates (ECFMG) (or a fifth pathway certificate for Americans who completed premedical education in the United States and graduate education in a foreign country).] If you are interested in considering employment with CDER's Office of Biostatistics, please submit your resume to:

Dr. S. Edward Nevius, Deputy Director, Office of Biostatistics
Bldg. 21, Room 3550, 10903 New Hampshire Ave., Silver Spring, MD 20993-0002
Telephone: (301) 796-1263; Email: SEdward.Nevius@fda.hhs.gov

For more information, please visit the Office of Biostatistics website:
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More information about the University is available on the University's homepage at <http://www.ust.hk>.

(Information provided by applicants will be used for recruitment and other employment-related purposes.)

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Survey Sampling Statistician

EOE

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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.

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Survey Sampling Statistician

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Attwell A L, Ward J D, Jones J A, Morris M A, Potts J. Community
Switched to Church-based Online (Circles) Social Networks. *J Med Internet Res* 2013;15(12):e76.

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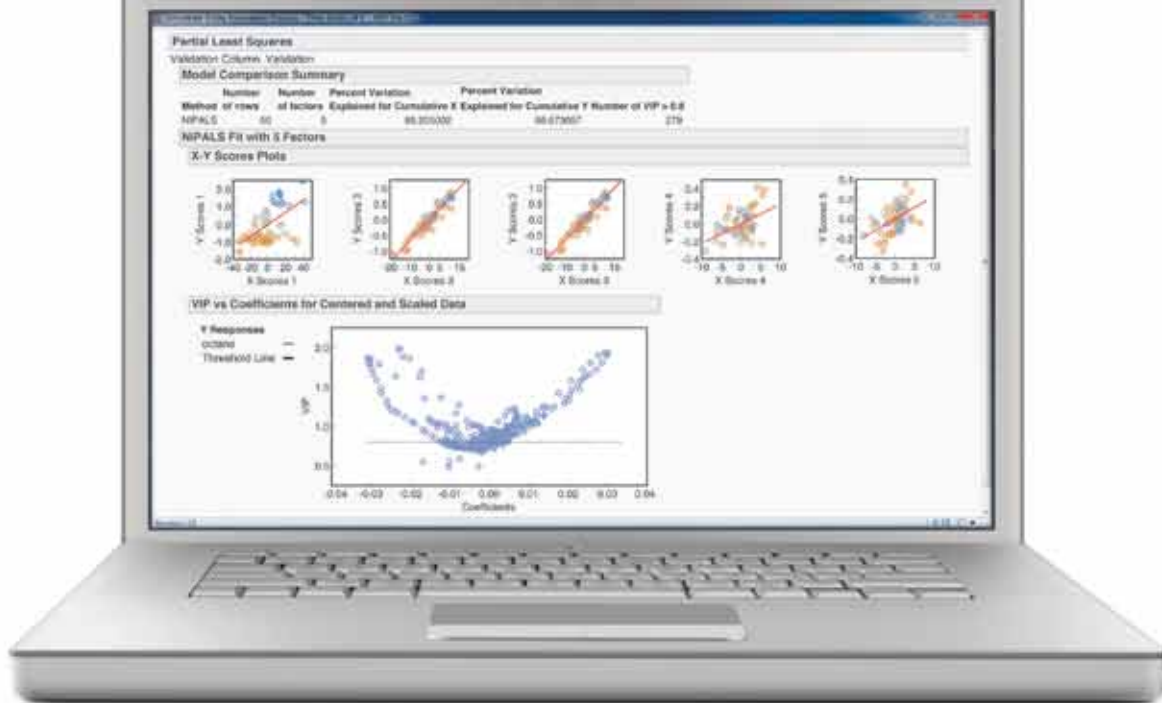
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