January 2018 • Issue #487

AMSTATNEWS

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

Analyze WEATHER FORECASTS for Data Expo 2018

ALSO:
External Nominations and Awards Committee: Why, What, and How?

STATS4GOOD: Statistics without Borders Responds to Crises Around the World

AMSTATNEWS

JANUARY 2018 • ISSUE #487

Amstat News welcomes news items and letters from readers on matters of interest to the association and the profession. Address correspondence to Managing Editor, *Amstat News,* American Statistical Association, 732 North Washington Street, Alexandria VA 22314-1943 USA, or email *amstat@amstat.org*. Items must be received by the first day of the preceding month to ensure appearance in the next issue (for example, June 1 for the July issue). Material can be sent as a Microsoft Word document, PDF, or within an email. Articles will be edited for space. Accompanying artwork will be accepted in graphics file formats only (.jpg, etc.), minimum 300 dpi. No material in WordPerfect will be accepted.

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

features

Rob Santos' pastime: Music photography at SXSW. Page 18

columns

Middle- and High-School Statistics Students: Build Quantitative Literacy with *A FREE ONLINE FEATURE*

On every second Tuesday throughout the school year, *The New York Times* Learning Network—in partnership with the American Statistical Association—hosts an online discussion about a timely graph. Students from around the world "read" the graph by posting comments about what they notice and wonder about, while our staff live-moderates by responding to the comments in real time and encouraging students to go deeper. All releases are archived (*https://goo.gl/h58XGC*) so teachers can use previous graphs any time.

Visit this introductory post at *https://goo.gl/imK59D* to learn more.

CORRECTION

The December issue of *Amstat News* incorrectly identified Jerry Reiter as Michael Bender and Cheryl Eavey as Kay Moore on Page 35 in the article titled "2017 SPAIG Award Winners Announced." We regret the error.

Arizona Chapter officers promote DataFest to Arizona State University students. Page 32

member news

Check out the Calendar of Events for JSM 2018 dates and more! Page 36

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Making New Year's Transitions

Photo courtesy of John Leahy

ASA President Lisa LaVange has led the office of biostatistics staff at the FDA's Center for Drug Evaluation and Research since 2011.

The New Year holiday offers a time to reflect upon past accomplishments and plan for new resolutions. This year, transition is also in the air, as I take on the wonderful honor of serving as ASA president in 2018 while making a career change at the same time. This first President's Corner gives me an opportunity to reflect on both the job I am leaving and the one I am about to assume, while giving *Amstat News* readers an inside look into what makes this president tick.

The US Food and Drug Administration (FDA) employs more mathematical statisticians in the GS 1529 series than any other government agency—more than 350 by recent count (*https://goo.gl/disWRv*). Statistical reviewers across the seven FDA centers occupy this civil service position to carry out the important work of regulating food, drugs, biologics, medical devices, veterinary medicines, toxicological research, and tobacco products for the American people.

As director of the Office of Biostatistics in the Center for Drug Evaluation and Research (CDER) since 2011, I have had the good fortune to lead an extremely talented and dedicated staff who develop and apply statistical methodology for drug regulation. Our staff members—predominantly holding doctoral degrees in statistics or biostatistics—advise pharmaceutical companies on statistical aspects of drug development; review clinical trial protocols; assess the benefit and risk of new drugs, biologics, generic drugs, and biosimilar products based on data submitted to the FDA for approval; and monitor the risk of drugs after they are marketed and their use expands. Our mission is to make sure safe and effective drugs are available to improve the health of people in the US.

A day in the life of a CDER statistician involves assessing the integrity of clinical data submitted in support of a marketing application and assessing the validity of the sponsor's analyses intended to provide evidence that the drug is safe and effective. But our work does not stop with these basic components of a statistical review. We conduct research in clinical trial design and analysis to improve the efficiency of drug development; we investigate other data sources—popularly termed real-world data—for evidence of safety signals that need further study; and we conduct meta-analysis to investigate trends across trials or drugs in the same class.

One of our most important jobs is to develop statistical policy and issue guidance so pharmaceutical companies know what to expect in our reviews. The development of statistical guidance documents is a frequent commitment agreed to under the Prescription Drug User Fee Acts (PDUFAs), first passed into law in 1992 and renewed every five years. With these acts, fees associated with marketing applications are used to provide additional resources for hiring review staff and improving processes to enable faster turnaround times for regulatory reviews and marketing decisions. The user-fee programs have shortened review times for new drug applications from 2.5–3 years to under a year, and their success has led to similar programs for biosimilar products and generic drugs.

Lisa LaVange

About a year into my job at FDA, I wrote about the challenges statistical reviewers faced in CDER and made a case for the indispensable role statistical thinking plays in meeting those challenges. This past year, I gave a JSM talk about my six-year FDA career highlighting the accomplishments of the talented statisticians I have had the privilege to lead. As a brief sampling of those highlights, CDER's Office of Biostatistics did the following:

- Grew from 165 statisticians and support staff to 216 (as of November 30, 2017). This growth is analogous to hiring an entire academic department—no small feat given the flat-line growth of doctoral-level candidates in our field.
- Issued statistical guidance on noninferiority trials, multiple endpoints, and statistical assessment of analytical similarity for biosimilar products; completed draft guidance on adaptive designs and meta-analysis. These were in addition to collaborating on numerous disease-specific guidances for both new and generic drugs.
- Sponsored collaborative workshops and research efforts in several areas of unmet medical need, most notably development of anti-bacterial products, products to treat a variety of rare diseases with no available therapies, and oncology/hematology products. Research topics spanned new methods for trial design, new biomarkers to enrich trial enrollment, and new surrogate endpoints suitable for accelerated approval of ground-breaking therapies. Trial designs that make use of prior information through Bayesian modeling were a breakthrough for CDER during this period as a way of substituting information when patients are scarce.
- Encouraged pharmaceutical sponsors to join forces in master protocols and platform trials designed to study more than one therapy in more than one disease in a perpetual fashion. The FDA supported efforts of patient advocacy groups to serve as a catalyst in these multi-organizational endeavors in breast cancer, lung cancer, and drug-resistant bacterial infections, as examples.
- Contributed to finding a solution to the opioid addiction problem through the evaluation of abuse-deterrent formulations and monitoring of drug abuse rates to determine the impact of marketing these formulations. Our leadership in developing and evaluating methodologies and data sources for post-market surveillance has been instrumental in FDA's continuing efforts to combat this immense public health problem.

This is not an advertisement for employment as an FDA statistician, but clearly, the impact of the job—the sheer number of topics and interesting problems our staff addresses—speaks for itself. What an immensely rewarding place to work!

As I leave one of the best leadership jobs in statistics, you might ask, "What were you thinking?" My decision was based on several factors. First, I felt a strong urge to attend to the training of statisticians, having struggled in their hiring for so long. My tenure at FDA has given me new insights into the importance of statisticians' being able to navigate data sources of all types, sizes, and levels of complexity to search for signals and solve complex problems. Our leadership in this area—our ability as data scientists to quantify uncertainty and make meaningful interpretations of the results—has never been needed more.

Second, I felt the need to resume my work in leadership training. Having launched a doctoral-level course in statistical leadership in 2011 and continuing with numerous short courses and lectures on the topic, the time is right to return to this important task in earnest.

Third, I wanted more dedicated time to serve as ASA president than continuing my leadership role at FDA would practically allow.

And fourth, my family calls. After six and a quarter years of commuting from Chapel Hill, North Carolina, to Washington, DC, it was time to go home.

On January 1, I rejoined the faculty in biostatistics in the Gillings School of Global Public Health at The University of North Carolina at Chapel Hill. Here, I serve as associate chair of the department and director of the Collaborative Studies Coordinating Center and am coordinating development of the data science curriculum and reinstatement of leadership training. I am excited to return to a workplace and colleagues I know well and enjoy working with. The department is fully supportive of my ASA presidency, and my commute has been reduced to a 10-minute walk.

My new responsibilities as a biostatistics faculty member at UNC align well with the various initiatives and activities underway at the ASA. In future issues of *Amstat News*, I look forward to sharing details of my 2018 ASA presidential initiatives in leadership and professional development with you. In the meantime, Happy New Year!

NIJ's Real-Time Crime Forecasting Challenge:

An Attempt to Encourage Data Scientists from Every Field to Think About Criminal Justice Problems

Joel Hunt, US Department of Justice

Earlier this summer, the US Department of Justice's National Institute of Justice (NIJ) announced the winners of the Real-Time Crime Forecasting Challenge. Four of the winners were students.

The goal of the challenge was to develop algorithms that could forecast police calls-for-service (CFS) in four crime categories in Portland, Oregon, for five forecast periods. The challenge had the following aims:

- Harness advances in data science in other fields to advance crime forecasting
- Encourage scientists from all fields to consider the challenges of crime and justice
- Conduct the most comprehensive comparative analysis of crime forecasting software and algorithms to date

An ancillary goal of the NIJ was to broaden awareness in the STEM community of NIJ's involvement in data science. Applicants could be in one of three categories: student (high school or undergraduate); small team/business; and large business.

The Portland Police Bureau provided five years of calls-for-service data as a training data set; however, contestants were not limited to using the CFS data. The four crime categories were all CFS, burglary (residential and commercial), street crimes, and theft of auto. The five forecast periods were March 1–7, 2017; March 1–14, 2017; March 1–31, 2017; March 1–April 30, 2017; and March 1–May 31, 2017.

The challenge was designed to test models that incorporated spatial and temporal aspects to forecast future locations of CFS. Winners were determined by the effectiveness and efficiency of their crime forecasting algorithms based on two criteria: Prediction Accuracy Index (*PAI*) and Prediction Efficiency Index* (*PEI**). The *PAI* measures the effectiveness of the forecasts with the following equation:

$$PAI = \frac{\frac{n}{N}}{\frac{a}{A}}$$

Where n equals the number of crimes that occur in the forecast area, N equals the total number of crimes, a equals the forecast area, and A equals the area of the entire study area. The *PEI** will measure the efficiency of the forecast with the following equation:

$$PEI^* = \frac{PAI}{PAI^*}$$

Where *PEI** equals the maximum obtainable PAI value for the amount of area forecast, a. As such:

$$PEI^* = \frac{n}{n^*}$$

Where n^* equals the maximum obtainable n for the amount of area forecast, a.

In all, 62 submitted algorithms were tested on a single data set. This is the largest known comparative analysis of crime forecasting algorithms to date. The challenge provided insights into the effects of spatial and temporal aggregations of CFS on the ability to forecast CFS.

The results indicate a clear and significant variance in the ability of the contestants' algorithms to forecast crime. Further, no one algorithm did well across all categories and forecast periods, though some were more effective, efficient, or both for some crime categories and forecast periods. There is clearly room for improvement to maximize the potential benefit to fighting crime.

EDITOR'S NOTE
The opinions, findings, and conclusions or recommendations expressed in this article are those of the author and do not necessarily reflect those of the US Department of Justice.

Figure 1a. Results for street crimes for a two-week period. The circle sizes are proportional to the size of the cell and positioned relative to the forecast's PAI and PEI* score.

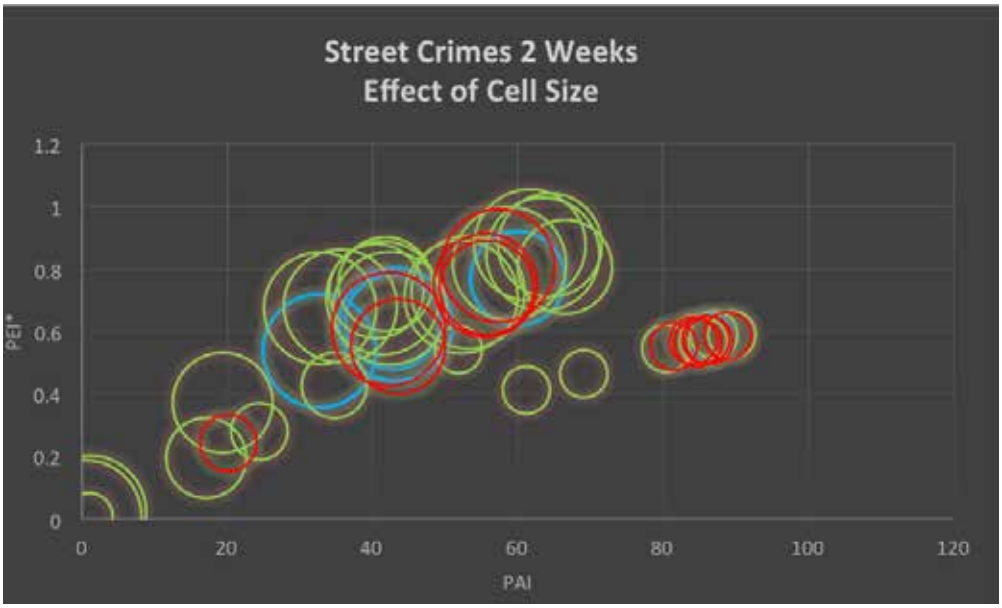
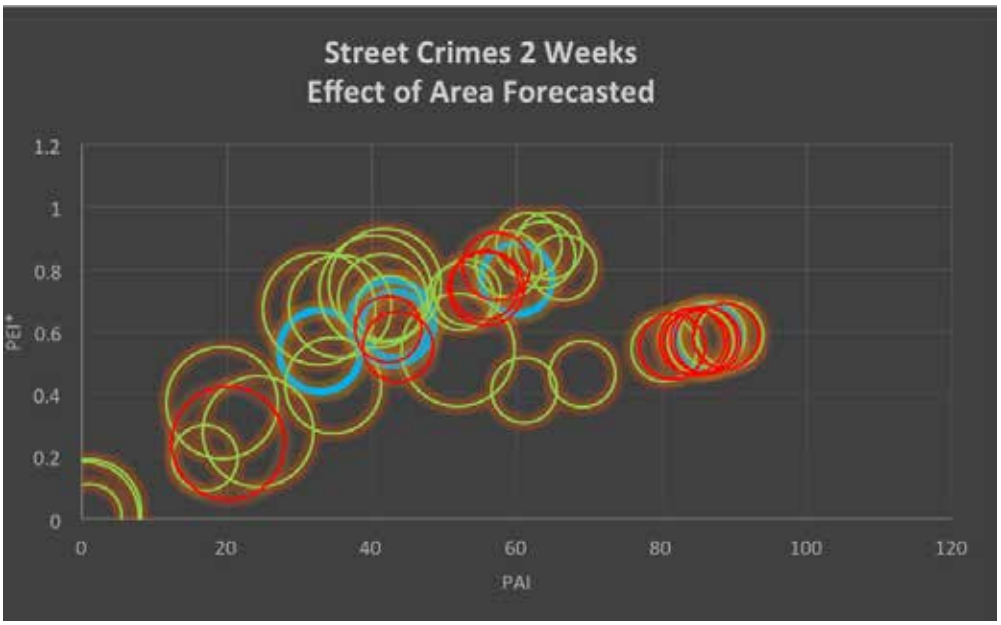


Figure 1b. Results for street crimes for a two-week period. The circle sizes are proportional to the amount of area forecast and positioned relative to the forecast's PAI and *PEI** score.



Based on the variance of the *PAI* and *PEI** values of the submissions, the challenge demonstrated that different algorithms may lead to more effective and efficient use of department resources (allocating resources to areas more likely to experience high CFS).

The results support findings from prior NIJ-funded research. Specifically, to effectively or efficiently forecast burglary, more crimes (time) are needed due to the lower probability of repeat and near-repeat burglaries compared to other crime types. Further, street crimes and thefts of auto are likely to have higher repeat and near-repeat patterns, allowing for more effective and efficient forecasts, even when fewer crimes are present.

The challenge results also provided NIJ scientists with information that will enable them to better judge the effectiveness of spatially-based policing strategies. **Figures 1a and 1b** show a general theme present in all combinations of crimes and periods. The color of the circle indicates the category of the forecast (i.e., blue is student, yellow is small team/business, and red is large business).

Based on these graphs, it appears forecasts using smaller areal units are more effective, but not more efficient. That there is a difference in effectiveness based on areal size is not surprising. The scale component of the modifiable areal unit problem suggests a variance in scores based on spatial scale. What is surprising is that the scale component does not affect the efficiency measure.

This tells us that when evaluating the effectiveness of a spatially-based police strategy, departments should consider the effect of choosing and maintaining the unit of spatial analysis. A change to a smaller unit of analysis could show an increase in effectiveness that may or may not be indicative of the impact of their strategy. To best understand the effectiveness of a strategy, keeping the cell size constant is critical. Additionally, smaller total forecast area results in a more effective, but not more efficient, forecast.

It is possible the *PAI* may need an adjusted score similar to other measures (e.g., adjusted r-squared, which penalize the score based on the number of variables in the model; however, in this case, an adjusted measure could penalize based on the size of the cell).

Practically speaking, when using a smaller cell size, you get a larger percentage of CFS per percentage of area policed. This is an important measure when considering that the percentage of area is akin to amount of resources (e.g., money, manpower) needed in the praxis of the strategy.

Another question raised by the results is why cell size and forecast area do not affect the efficiency. One potential answer is that the measure of effectiveness relies on measures of area forecast, whereas the measure of efficiency relies on measures of CFS.

In practical terms, the measure of efficiency also is important for police departments to consider because it measures the ratio of CFS forecast to how many CFS could have been forecast for that amount of area. When communicating decisions and strategies to the public, it is important to understand the limitations of the analytics guiding those decisions and strategies. The measure of efficiency helps with that.

When communicating decisions and strategies to the public, it is important to understand the limitations of the analytics guiding those decisions and strategies. The measure of efficiency helps with that.

Getting to Know the NIJ

As the research arm of the US Department of Justice, NIJ invests in scientific research across disciplines to serve the needs of the criminal justice community and has been a driving force in the use of data to address the challenges of crime and justice since the 1980s. NIJ recognizes that rapid advances in data sciences are being used to forecast consumer behavior, detect medical anomalies, and provide informatics about product consumers. These advances have been made by students, professors, scientists, corporations, and individuals across the spectrum of scientific disciplines, including biology, cognitive behavioral research, economics, and statistics.

These are just the preliminary findings. NIJ scientists will continue to explore the results of the challenge and produce updates on what is learned, which will be available on the challenge website (*https://goo.gl/kLUK1q*). To be added to the NIJ's data scientist listserv—used to announce publications, events, and funding opportunities—visit *NIJ.gov/data-challenge*. To follow NIJ in general, visit *NIJ.gov/subscribe*. ■

External Nominations and Awards Committee: Why, What, and How?

ASA committee aims to ensure statisticians are represented on boards and in external awards

Statisticians have an important role in helping to make evidence-based decisions in a world awash in data. For this reason, statisticians should serve on expert panels, advisory committees, and commissions where their expertise can enrich deliberations. Equally, statisticians who have been brilliantly playing these roles for a long period should be acknowledged for their contributions.

Committee Members

Narayanaswamy Balakrishnan (Co-Chair)
Christy Chuang-Stein (Co-Chair)
Mary K. Batcher
Joseph C. Cappelleri
Katherine B. Ensor
Joel B. Greenhouse
Regina Y. Liu
Sastry G. Pantula
James L. Rosenberger
Katherine K. Wallman
Steve Pierson (Staff Liaison)

Part of the American Statistical Association's mission is to promote the practice and profession of statistics. The ASA wants to proactively ensure that qualified statisticians are nominated for external advisory boards/committees and that worthy statisticians are nominated for external awards.

To this end, the ASA has convened an External Nominations and Awards Committee (EN&AC) with a specific charge to do the following:

- Identify boards, committees, and other bodies external to statistics to which statisticians should be appointed to assist in advancing science and in raising the profile of the profession
- Identify high-profile awards (external to statistics) for which statisticians might be eligible
- Identify people who should be nominated for these positions or awards and identify and reach out to people who would be able to effectively nominate them

This new committee will operate similarly to other ASA committees, with members serving a three-year term and having an opportunity for a second-term reappointment. For more information, visit *https://goo.gl/zUwddr*.

The committee has begun its work and developed the following principles and process to guide its work:

- Identify and recommend the most worthy candidates
- Solicit input from pertinent ASA section(s) and the ASA membership as much as time allows
- Encourage self-nominations
- Recommend nominees with the requested expertise and open minds to serve on external boards/committees; the ability to maintain one's objectivity on the issues of focus is an important consideration
- Recognize the need for diverse representation for nominees for external boards/committees and external awards
- When appropriate, recommend multiple nominees with distinctive backgrounds to allow a richer overall composition of an external board/committee

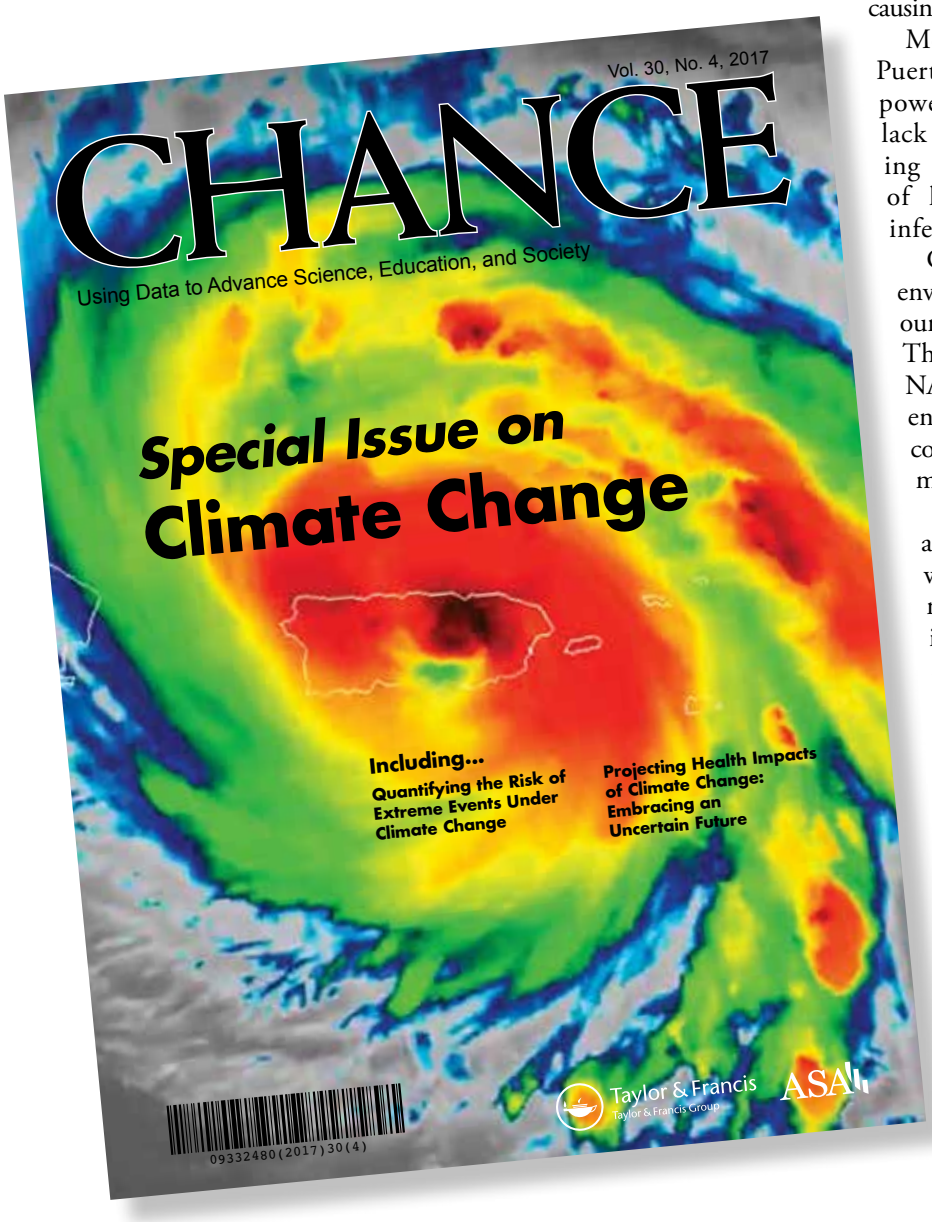
To foster its mission, EN&AC is compiling a list of existing external boards/committees on which statisticians are represented or there is a potential for a statistician to contribute significantly. The committee is also compiling a list of existing awards for which statisticians should be nominated. Members plan to reach out to leaders of the statistical community to help populate these lists. We are seeking ASA members' help also. If you have information for the lists we are compiling, please send it to the committee co-chairs, Narayanaswamy Balakrishnan at *bala@mcmaster.ca* and Christy Chuang-Stein at *christyazo@gmail.com*. If you have suggestions about the principles and process outlined above, please share it with the committee co-chairs, as well. ■

CHANCE HIGHLIGHTS

CHANCE Special Issue Focuses on Challenge of Climate Change

Scott Evans, *CHANCE* Executive Editor

The United States is still feeling the effects of three major hurricanes this year. In late August, Hurricane Harvey brought record rainfall and flooding to Houston. In September, Hurricane Irma ravaged Florida. Shortly thereafter, Hurricane Maria hit Puerto Rico, causing more than 50 deaths.



Months later, most of Puerto Rico is still without power and many people lack access to clean drinking water. Suspected cases of leptospirosis bacterial infections are rising.

Climate change is the environmental challenge of our and the next generation. Though there are deniers, NASA and climatology scientists have described the compelling evidence of climate change.

Global temperatures are rising. 2016 was the warmest year on record, making it the third year in a row with record-setting surface temperatures. Furthermore, eight of the 12 months (January – September, with the exception of June) were the warmest on record for those respective months. Earth's average surface temperature has risen about 2.0/1.1 degrees Fahrenheit/Celsius since the late 19th century, when records began at a global scale.

This change is driven largely by increased carbon dioxide (CO_2) in our atmosphere—now at its highest point in 3 million years at 400 parts per million (2016)—and other human-made emissions. Most of the warming occurred in the most recent 35 years, with 16 of the 17 warmest years on record occurring since 2001. The oceans have absorbed much of this increased heat, with water temperatures rising 0.302 degrees Fahrenheit since 1969.

Other effects of climate change are readily observable. The Greenland and Antarctic ice sheets have decreased in mass. Data from NASA's Gravity Recovery and Climate Experiment show Greenland lost 150 to 250 cubic kilometers (36 to 60 cubic miles) of ice per year between 2002 and 2006, while Antarctica lost about 152 cubic kilometers (36 cubic miles) of ice between 2002 and 2005. Glaciers are retreating almost everywhere around the world, including in the Alps, Himalayas, Andes, Rockies, Alaska, and Africa. Satellite observations reveal that the amount of spring snow cover in the Northern Hemisphere has decreased throughout the last 50 years and that snow is melting earlier. Global sea levels rose 8 inches in the last century, with the rate in the last two decades nearly doubling that of the last century. The extent and thickness of Arctic sea ice has declined rapidly. Extreme weather events have increased in frequency and intensity. Since 1950, the number of record-high-temperature events in the United States has increased, while the number of record-low-temperature events has decreased. Since the beginning of the Industrial Revolution, the acidity of surface ocean waters has increased by 30 percent.

Vulnerable to climate change impacts such as droughts, floods, heat waves, extreme weather events, and sea-level rise are 800 million people.

The impact of climate change is enormous and growing. Vulnerable to climate change impacts such as droughts, floods, heat waves, extreme weather events, and sea-level rise are 800 million people (1% of the world's population).

Humans play a role in creating problems, but can also play a role in addressing them. The protection of nature is one key part of the solution. Eleven percent of global greenhouse gas emissions caused by humans can be blamed on deforestation, comparable to the emissions from all cars and trucks on the planet.

A worldwide effort to curb climate change is crucial. The Paris Agreement or Paris Climate Accord plots a new course in the global climate effort, bringing nations together for the common cause to combat climate change and adapt to its effects, with enhanced support to assist developing countries to do so. The aim is to strengthen the global response to climate change by keeping a global temperature rise this century below 2 degrees Celsius above pre-industrial levels and to pursue efforts to limit the temperature increase even further to 1.5 degrees Celsius. As of October 2017, 195 United Nations Framework Convention on Climate Change (UNFCCC) members have signed the agreement and 169 have become party to it, agreeing to limit global warming and adapt to climate change in part through the use of nature-based solutions. Unfortunately, the United States has threatened to withdraw from the agreement.

Eight articles and an editorial discuss climate change and its impact. Articles were authored by members of the ASA's Advisory Committee on Climate Change Policy, whose mission is to inform Congress, the public, and others about climate change science. Peter Craigmile, past chair of the ASA's Advisory Committee on Climate Change Policy, served as the guest editor for this special issue. ■

Quality Engineering Editors Create Column About Industrial Statistics to Solve Problems

Quality Engineering editors Willis Jensen and Byran Smucker have created a new column, dedicated to practitioners of industrial statistics, in the journal.

The column, titled "Open Challenges in Industrial Statistics," is peer-reviewed and edited by Jensen and Smucker.

To encourage stronger collaboration between academia and industry, this column will do the following:

- Create opportunities for collaboration and innovation between academia and industry partners within the framework of a peer-reviewed journal
- Recognize that the work to create a well-defined problem is just as valuable as the work to create a solution
- Tap into the power of crowdsourcing and more rapid publication of new ideas

Once problems have been published, all are invited to submit a solution. The most sufficient solutions will be published in subsequent issues.

The column is open access and can be found at *https://goo.gl/NRvVEe*.

For more information about the column or to submit a problem statement, visit *https://goo.gl/4Dk2ud*.

Significance Spotlights Arithmetic Mean in December Issue

The December 2017 issue of *Significance* is now available in print and digital formats. The cover story tells the fascinating history of the arithmetic mean, why scientists of the past rejected the idea, and why their concerns are still relevant in the ongoing struggle to communicate statistical concepts.

We also ask one of the biggest questions about life in the universe: "Where is everybody?" Exoplanet discoveries now number in the thousands, but the search for extra-terrestrial organisms remains fruitless. What's the probability that we're alone?

And with the flu season upon us, we look back over 300 years of deadly pandemics and wonder whether it's possible to predict how many outbreaks there might be in the century to come.

Also in this issue:

- Making sense of multiple extreme weather events
- When algorithms go wrong, who is liable?
- How one woman used regression to influence the salaries of many
- Big money's big mistake

Access the digital version of *Significance* through the members' portal, or download and read the magazine on the go with our iOS and Android apps. For information about the apps, visit *https://goo.gl/yZcUJK*.

If you are a print subscriber, your December issue will be arriving soon. *Significance* is online at *www.significancemagazine.com*. ■

What Is Data Science Specialization, and What Can It Do for You?

Steve Pierson, ASA Director of Science Policy

Previous issues of *Amstat News* have highlighted new bachelor's, master's, and doctoral programs in data science and analytics. Acquiring data science and analytics skills and certifications is also possible through massive open online courses (MOOCs). A leading MOOC specialization was started by Brian Caffo, Roger Peng, and Jeff Leek of The Johns Hopkins University. Here, they provide answers to a few questions we posed to them.

Brian Caffo is a professor and director of the graduate programs in biostatistics. He co-created and co-directs the Data Science Specialization MOOC.

Roger Peng is a professor in the department of biostatistics. He co-directs the Data Science Specialization MOOC.

Jeff Leek is an associate professor in the department of biostatistics. He also co-directs the Data Science Specialization MOOC.

The Johns Hopkins University

Degree name: Data Science Specialization

Website: *www.coursera.org/specializations/jhu-data-science*

Number of students annually enrolled: Difficult to quantify given the platform changes

Target audience: Students with a quantitative mindset and willingness to learn

Program format: 10 courses, 9 core classes, and final capstone project class; not for credit; low-cost/open-access education via Coursera

Please describe the basic elements of your data science/analytics curriculum and how the curriculum was developed.

Broadly, the curriculum was developed to mirror necessary steps in a data science process. The program starts with an overview and a course in R programming. The R programming language factors heavily into our program, and all subsequent courses depend on it. Students next take courses on getting and cleaning data, exploratory data analysis, and reproducible report writing. The core statistics portion of the program includes courses in statistical inference and regression models. Then, there is a course in machine learning, focusing on implementation and concepts over technical and mathematical details. The program finishes with a course on developing data products, where R Studio's Shiny framework for developing R web apps is a focus. Students who pass the curriculum can then take a capstone project class, where they put everything they've learned from the courses together.

What was your primary motivation(s) for developing a data science/analytics specialization program? What's been the reaction from students so far?

We are large believers in expanding educational opportunities and increasing access. The model of having content being free or low cost was appealing to us. We were especially interested in data science, since that is where our interests lie.

How do you view the relationship between statistics and data science/analytics?

Statistics is a subset of data science, as data science includes aspects of data collection, curation, and manipulation not generally considered part of the statistics field. Going by our program, four of nine equal-length courses (i.e., exploratory data analysis, statistical inference, regression models, practical machine learning) focus on statistics, while the remaining focus on aspects of data science, programing, obtaining and cleaning data, reproducibility and report writing, and building data products.

What types of jobs are you preparing your graduates for?

Our program is not a degree-granting program. As a secondary credential, for a student with an existing quantitative background, they will be able to work anywhere that emphasizes the data analysis aspects of data science. For many, our program will be their first introduction to data science and entrance into the field. For others, our program helps them retool to expand their current role at their organization. A common example is a data engineer becoming more involved in data analysis.

What advice do you have for students considering a data science/analytics specialization program?

For MOOC programs, we highly recommend that students build a portfolio. This is essential, as most MOOC programs do not offer a formal degree. A portfolio of code and projects can fill in the gap for lack of a degree and demonstrate mastery of the material.

Describe the employer demand for your students/graduates.

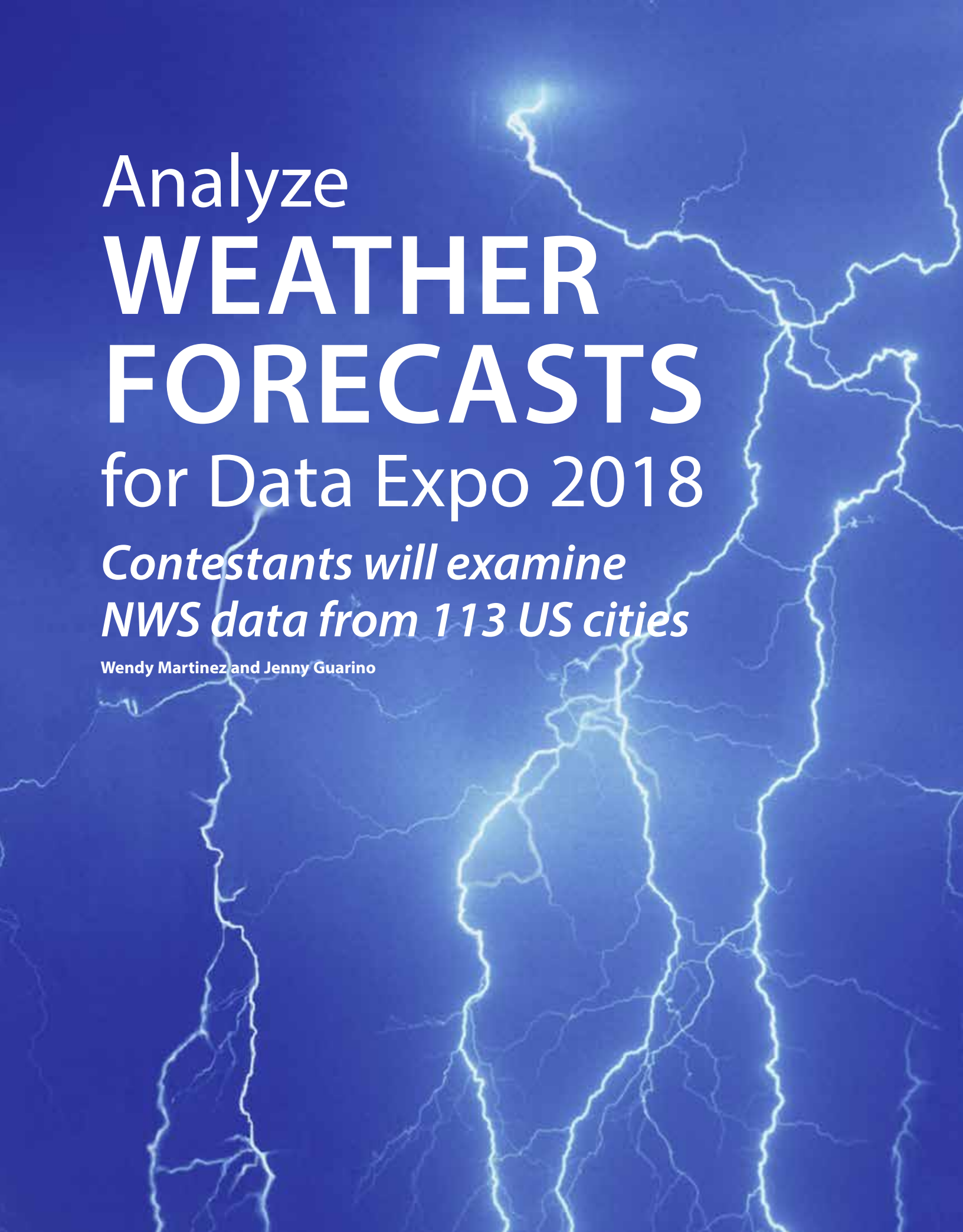
We have seen employers allow our program to serve in lieu of formal master's programs. In addition, we have seen a great number of employers use our program to retrain their workforce.

What should an employer look for when they see a certification on a résumé?

For our program, and likely data science in general, they should look at the applicant's GitHub page. They should see interesting project and code contributions.

Can someone with a data science certification walk out of the course and become a data scientist?

It depends on the person's background. For the typical student from the program, they could work as a data scientist in an introductory capacity. Our more advanced students who are augmenting existing quantitative credentials, they could take on higher-level data science positions. ■



Analyze WEATHER FORECASTS for Data Expo 2018

Contestants will examine NWS data from 113 US cities

Wendy Martinez and Jenny Guarino

The Statistical Computing and Graphics sections will host the Data Expo in 2018.

The data consist of three years of weather forecasts for 113 cities in the United States harvested from the National Weather Service website. Historical data that do not necessarily match the location of the forecasts are also provided, and contestants are allowed to use additional weather data in their analyses.

Possible questions for analysis include the following:

- What is the distribution of the errors in the forecast?
- Are some locations more stable or variable than others?
- How has the weather changed over the three years?

Contestants must present their results at JSM 2018 in Vancouver, British Columbia. Group entries are welcome. To enter, submit a speed session abstract to *https://goo.gl/UML55o* by February 1, 2018. (It doesn't need to be perfect or specific. Abstracts can be modified later.)

After the abstract is submitted, contestants must send an expression of interest/intention by February 2, 2018, to Radu Herbei at *herbei@stat.osu.edu* and Leanna House at *lhouse@vt.edu*. The email should include the submitted abstract and abstract number.

A full description of the 2018 Data Expo can be found at *https://goo.gl/ASdwWv*.

Going Back … Way Back

The Statistical Computing and Graphics sections have been sponsoring the Data Exposition (Expo) for many years, during which they have challenged contestants to analyze a given data set. The first challenge took place in 1982 and was sponsored by the then Committee on Statistical Graphics. The stated purposes of the first exposition were "(1) to provide a forum in which users and providers of statistical graphics technology can exchange information and ideas and (2) to expose those members of the ASA community who are less familiar with statistical graphics to its capabilities and potential benefits."

Information about this and later Data Expos can be found at *http://stat-computing.org/dataexpo*, along with links to the data sets used.

It is interesting to see the changes in the data sets over the years. The data set for the 1983 Data Expo had measurements of mpg, number of cylinders, and displacement on 406 automobiles.

It is not surprising that the size of the data sets has grown. For example, the airline on-time data used in 2009 contains approximately 120 million records (12 gigabytes) consisting of flight arrival and departure details for all commercial flights within the Unites States from October 1987 to April 2008. The airline data set has become widely used in machine learning and data science research.

The Government Statistics Section (GSS) started to issue annual data challenges in 2015. The contests were open to anyone interested in participating, including college students and professionals from the private or public sector. These contests challenged participants to analyze a government data set using statistical and visualization tools and methods.

Mike Jadoo from the Bureau of Labor Statistics participated in two data challenges as a contestant in the professional category. He has this to say about the experience:

> I participated in two data challenges, and in my opinion, the experience was great. From my participation, I gained more skills in programming and analyzing data and was able to bring those abilities back to the office that I work for. I have also shared the skills I attained with the students I teach, which has made a big difference in the classroom experience. Students love to hear how the topics they are learning [about] can actually be applied in different situations.

Professors have found the data challenges to be good teaching tools. Several entries into the GSS expos have been a team of students from a statistics class in which the analysis of the challenge data set was the main focus.

Eric Kolaczyk of the Center for Information and Systems Engineering at Boston University used the 2017 Data Challenge in a unique way. He held his own contest in the classroom, where each student was asked to learn about the data and conduct their own analysis. The winning student's project was then submitted as the entry.

In some cases, the contestants continue to interact with government personnel providing the data. For instance, Jonathan Auerbach of Columbia University and a winner in the 2016 GSS Data Challenge was funded by the Evaluation of Low Cost Safety Improvements Pooled Fund Study to present his award-winning paper to 40 state member representatives in its annual Technical Advisor Meeting. The paper offered a new statistical methodology for highway safety evaluations and presented a fresh perspective on the evaluation of pedestrian safety improvement, according to Roya Amjadi of the Federal Highway Administration.

Contestants in the Data Expo and Data Challenge have also had the opportunity to publish their results in a special issue of the refereed journal *Computational Statistics*. Editor-in-chief Juergen Symanzik and the co-editors of the special issues are currently working on the 2016 and 2017 challenge issues, making the articles fully reproducible. ■

MORE ONLINE
For more information about previous data expos, visit *http://stat-computing.org/dataexpo.*

PASTIMES OF STATISTICIANS

What Does Rob Santos Like to Do When He Is Not Being a Statistician?

Courtesy of Rob Santos

Rob Santos is chief methodologist and director of the Statistical Methods Group at the Urban Institute, as well as an SXSW crew chief. He helps manage about 100 photographers every year at the SXSW Festival in Austin, Texas.

MORE ONLINE
To see more photos, visit Santos' Flickr page at *https://goo.gl/4mSEhD.*

Who are you, and what is your statistics position?

I am a native Texan, born and raised in the west side neighborhoods of San Antonio. I've always had a love for mathematics and statistics, and, to my delight, was able to pursue a career in survey research first as a sampling statistician and then as a survey methodologist and statistical consultant.

After about 40 years, I find myself in the rewarding role of chief methodologist and director of the Statistical Methods Group at the Urban Institute. It is an interesting and challenging position that allows me to work with researchers in a broad swath of policy research—immigration, housing discrimination, travel behavior, firefighter safety, education, program evaluation, health policy, justice policy, food insecurity, nonprofits collaborations, to name a few.

Tell us about what you like to do for fun when you are not being a statistician.

Being a native Texan who lived (and now lives) in Austin, I always enjoyed attending the Austin City Limits Festival, a three-day outdoor music fest at

Courtesy of Rob Santos

Rob Santos took this photo of St. Vincent, one of the many musical artists he has captured with his Nikon.

Zilker Park near downtown Austin. (Regarding Zilker Park, think "moontower" in the movie *Dazed and Confused*, shot in Austin.)

In 2009, as the ACL Fest was approaching, I awoke one morning and decided I wanted to be a live music photographer. I knew literally nothing about photography. I somehow managed to get a music magazine from New York City to give me media credentials and photoshot from the music pits at the foot of the stages during the 2010 and 2011 ACL Music Fests.

In 2012, the magazine figured out I knew nothing about photography and dropped me like a hot potato, so I submitted a portfolio with the few good images I had captured by chance, and was selected as a photographer for SXSW Film, Interactive/Music. I have now been photoshooting and learning event photography for SXSW since 2012.

I am a SXSW photo crew chief and help manage about 100 photographers in our crew each year at the SXSW Festival in Austin. I have had the opportunity to photograph artists of many musical genres who come from all over the world to play at SXSW. And I have learned and been inspired by the high-tech innovations of the Interactive Festival, plus the creative approaches to education at the SXSWEDU conference. In fact, a lot of my ideas for new programs at conferences like JSM and the annual conference of the American Association for Public Opinion Research stem from my exposure to the SXSW Festival. It's always surprising that sources of inspiration and insight can come from the most unusual places. All this, while having fun taking pictures of celebrities, artists, and world leaders.

What drew you to this hobby, and what keeps you interested?

It's weird, but my interest in live music photography was spontaneous. Once it occurred, I listened to and acted upon that sudden interest and it quickly grew into a passion. It is a way to be creative and use both sides of the brain in a fun way. ■

STAT*tr@k*

How One Team Aced an Annual Data Science Hackathon

EDITOR'S NOTE
The authors on the hackathon team are either employees or contractors of Pfizer Inc. Views and opinions expressed in this article are the authors' own and do not necessarily reflect those of Pfizer Inc.

Abidbhai Marchant (Captain), Mustafa Kamal, Jim Li, Ben Lyons (Analyst), Vijay Peethambaram, Alok Rastogi, Lindsey Schott (Developer), and Kelly H. Zou (Storyteller)

Have you read the article by Brent Dykes titled "Data Storytelling: The Essential Data Science Skill Everyone Needs?" According to Dykes, "Data storytelling is a structured approach for communicating data insights, and it involves a combination of three key elements: data, visuals, and narrative." For the purpose of data storytelling, it is helpful if you are a "data ninja" who possesses both intelligence (IQ) and emotional intelligence (EQ).

In the fall of 2017, we participated on Team 1—consisting of eight members among five teams—at the annual Tableau hackathon. Each team included approximately 10 participants who were willing to enter the contest in advance.

Prior to the virtual formation of the team, the teammates barely knew each other and their programming levels in Tableau were variable. The hackathon organizers managed to consider leveling the skills across all participating teams.

Tips for data scientists

Kelly Zou, the team's main storyteller and an analytic science lead at Pfizer provided the following advice (see *https://goo.gl/NiqbSs*) to fellow data scientists in the era of big data:

- Be imaginative, inquisitive, and creative for the four Vs (volume, velocity, variety, and veracity) of big data
- Be savvy and master communication skills
- Challenge the norm, but be mindful of underlying mechanisms and methodology
- Expand horizons to include subject-matter expertise areas
- Gain hands-on experience in hardware and software development
- Network with others in the quantitative professions
- Participate in internships and practical training
- Possess a zest for learning and think beyond the massive data and their surfaces
- Seek excellent career mentors and sponsors
- Understand the policies and challenges for data access and analysis

Four complex human activity tracking data sets were provided to us one week before the final presentation date. We were asked to complete an interactive Tableau dashboard within a short period of time. The team captain and analyst immediately set out to tackle understanding, making sense of, and analyzing the data before generating an illustrative demonstration for insights.

Our team won in all four areas: storytelling, insights, visual appeal, and innovation. Thus, we would like to share our experience winning a data science hackathon.

Data Parcellation: The Gruesome Pre-Processing Work

The moment when the data sets were assigned felt to us like receiving our SAT or GRE scores. Our hearts pounded loudly and the curiosity was evident. Soon afterward, however, the reality hit us and gave us a sinking feeling. We simultaneously took a peek at the data sets stored in the CSV formats before having a brief team discussion. We realized quickly that there were four complex data sets with no to little information about the source of data generation or the variables. We started to do our homework to gain a better understanding of each data set.

1. The "Report" data set recorded various activity types (e.g., eat, walk, car, bus, train, etc.) and the corresponding activity durations and timestamps down to minutes in a period of two weeks.
2. The "Smart Phone" data included features (e.g., steps, activity, radio, gravity, pressure, etc.) and timestamps.
3. The "Smart Watch" data set included features (e.g., heart rate, acceleration, battery, gravity, magnetometer, gyroscope, etc.) and timestamps.

4. The "Glasses" data set recorded high-dimensional value (e.g., acceleration (x,y,z), gyroscope (x,y,z), electrooculograph (l,r,h,v), etc.) and timestamps.

Before we were able to consider a statistical analysis plan, we had to parcellate (split) the text timestamps into variable columns. We assumed a human subject wore a smartphone, smart watch, and glasses to record activities and durations. Since Tableau could not provide an easy way to separate the timestamped mobile data, we decided to use a data parcellation process using both RStudio and raw CSV.

Making Sense of an Abundance of Messy Data Sets

We realized being too broad or too choosy were not the best strategies. Thus, under the main theme of the hackathon, which was "data storytelling," we assumed the same human subject recorded two weeks of mobile data. We conducted exploratory descriptive analyses to visualize the data in Tableau. It is important to gain experience in this software and tell a succinct and coherent story within 10 minutes of the final presentation. We stayed focused and were realistic from the beginning.

Seeing the Big Picture and Realistic Hypothesis Generation

We liked the "big picture" approach, given the background information we could find on our own. In a word, by 2020, "smartphones will account for two out of every three mobile connections globally." We set our overarching goals—to understand human behavior, assess how activities affect the human body, help improve health, and leverage future data mining and machine learning—quite high. Perhaps we could discover and build apps that would be valuable to society.

We decided to first describe the human activities overall, and then the top 10 activities during the weekdays vs. the weekend for the human subject. In addition, we queried to identify the factors that could affect the heart rate (HR). We aimed to examine the variation of HR over time. In addition, we hypothesized the relationship between heart rate and other factors, including the step taken and the pressure the smart watch was able to record.

Building Analytic Dashboards with Time Constraints

When the main developer started to quantitatively and visually address these analytic tasks, the team realized each dashboard required painstaking detail. Even the consistent color choices across various panels within the entire delivery would be meaningful to lay audience members who had not seen or lived with the data as we had. Indeed, we strived to marry data and art! Outliers were informative and handled with caution.

Attention to Details vs. Getting Things Done

Realistically, however, we only had one week. Thus, we could not experiment with or obsess over too many variations while aiming to perfect the final product. During the week and weekend before the final presentation, we asked many questions surrounding the goals and approaches. If we hadn't known something in advance, it was a great opportunity to find out. For example, we studied the variables associated with mobile devices, as well as the literature on time series data generated by mobile sensors. In our mind, we hoped to use such subject-matter knowledge.

Quantitatively, we found the top activities using the analysis of frequencies and found differences in the average activity durations over time. For example, the weekday vs. weekend patterns of activities were different. We found positivity relationships between average step per minute and HR, as well as air pressure and walking speed. Interestingly, there was a gap in the timestamps, as the human subject did not carry his or her devices on July 6.

Postulating the Main Character from Complex Data

A vivid mental picture started to emerge after we lived and breathed data in a detective-like investigation during our spare time. We envisioned a human "techie" who spent much time at home living "in" his or her computer, taking walks, partying, and picnicking. From July 4–6, as well as during mornings, the human had a low level of activity. We thought he or she was likely a US resident perhaps having a BBQ and forgetting to carry the mobile device for a day.

The Monday prior to the holiday was the busiest in terms of activity. Perhaps the human was

a summer intern, a vacation-goer, or a technology employee. This human spent substantial time on picnicking and walking, which could imply a sunny location (e.g., the West Coast), but not Seattle, London, or New York City. Interestingly, this human was not into shopping and perhaps enjoyed online shopping instead. This figure came alive like a character in a Lego movie!

Defining the Target Audience and Attention Span

We realized the presentations of five teams would take less than an hour in the late afternoon. Luckily or unluckily, our presentation was to take place at the beginning. We had to give an educated guess about our target audience and their attention span. The advantage of presenting first would be to set the stage and a high bar. The potential disadvantage was being forgotten about.

The main attendees of the Tableau Day were technologically savvy, but they might not use vivid colors beyond those in a standard computer demonstration. Of course, we avoided making any stereotypical assumptions, and our key strategy was to introduce artistic elements in an illustrative overview, followed by a solid and detailed live demonstration of our Tableau dashboard.

Creative, Vivid, and Complementary Presentation Formats

Giving an oral presentation is always nerve-wracking, and our team needed to present a live demonstration within just 10 minutes. Thus, we decided to make "cartoon-like" introductions to lead into the Tableau demonstration. We asked the organizer if it was okay to provide such a story illustration. It was permitted, so we used bold colors and symbolic Lego figures with a corresponding personality or activities to echo the "main human character" in the story. We wanted the audience to grasp the storyline beyond the "dry" tables or figures commonly seen in presentations.

In this way, the entire package was artistically interesting, visually compelling, and scientifically sound. We also related the presentation to our company's "OwnIt!" culture through Head, Heart, and Guts.

Compelling Storyline and Storytelling

Storytelling skills can make a demonstrations either live or die. Thus, we walked through a mock presentation the day before, soon after submitting the final dashboard to the hackathon organizers. We initially went over the details slowly to mirror the key objectives, which were to give a bird's-eye view of the data and explore the factors associated with HR.

We decided to be succinct in the introduction and used graphical and humorous illustrations, but we were specific after that and used a mouse to show the live dashboard panels across multiple variables and panels. We also included a few light comments about the speculated human character since the audience could relate and remember a fun story well.

Collaborating to Let Everyone's Strengths Shine

Throughout the week, we collectively went from feeling hopeless in front of seemingly messy data to having meaningful insights. The knowledge gained while doing additional homework to understand mobile devices and sensor data was also valuable. In fact, we all received a gift from the organizers on "Art + Data," which would translate into meaningful dashboards.

Various team members connected throughout the hackathon experience, and in fact, everyone's strength was able to shine through. Several team members had the opportunity to meet in person informally to celebrate the win and relive the week.

If you think a hackathon may be for you after reading about our experience, then definitely try one. It is a great way to collaborate, communicate, and present. ■

If you think a hackathon may be for you after reading about our experience, then definitely try one. It is a great way to collaborate, communicate, and present.

STATS4GOOD

Statistics without Borders Responds to Crises Around the World

With a PhD in statistical astrophysics, **David Corliss** works in analytics architecture at Ford Motor Company while continuing astrophysics research on the side. He serves on the steering committee for the Conference on Statistical Practice and is president-elect of the Detroit Chapter. He is the founder of Peace-Work, a volunteer cooperative of statisticians and data scientists providing analytic support for charitable groups and applying statistical methods to issue-driven advocacy in poverty, education, and social justice.

In this new column for *Amstat News*, we will explore the world of Data for Good, where statistical analysis is dedicated to good causes that benefit our lives, our communities, and our world. Much of this work is done by volunteers who donate their time to contribute to the important and meaningful science supporting causes they care about deeply.

Statistical volunteering offers many benefits to the statistical professional—it will be one of the main subjects of these monthly discussions. However, the most important outcomes will never appear on a résumé, but only in the lives affected by the projects we perform. As statistical and data science professionals, the need for what we do every day on the job is great, but volunteers are still far too few. The Data for Good movement has grown so rapidly because it makes so much more than a good résumé; it makes a career by making a real and tangible difference in our profession, our society, and our world.

In recent years, volunteer work in statistics and data science has become much more common. Data for Good is a growing movement that has been embraced by individuals, companies, and professional associations. A number of organizations have sprung up to design and manage statistical volunteering projects, recruiting volunteers and connecting them with projects and organizations that will benefit from analytic support. This addresses a prominent need in organizations pursuing good causes: They often have data, but lack statistical skills and resources to perform analytics and cannot afford to hire highly skilled consultants. In these situations, statistical volunteers have the opportunity to make a real difference in the world doing the things we love the most.

One of the most prominent Data for Good organizations is Statistics without Borders (SWB), which is an outreach group from the American Statistical Association. This all-volunteer organization was established in 2008, making it one of the first Data for Good organizations. SWB offers free statistical consulting to governments and nongovernmental organizations (NGOs). Inspired by Doctors Without Borders and similar organizations, SWB is nonpartisan and secular, with much of their work supporting initiatives in the developing world. As with other Data for Good organizations, the nations and organizations SWB supports have data, but lack advanced analytic personnel and resources to leverage it.

Check out the Statistics without Borders website at *https://goo.gl/gHjWWg* to learn about current projects and how to get involved. Getting on their email list is the best way to stay in touch, as new projects can come up suddenly.

In response to a crisis, time is critical. In October, I was one of dozens who joined an SWB Data Dive to map hurricane damage in Puerto Rico. This rapid response event was well organized, user-friendly, and open to all, with participation from many first-timers.

Upcoming Activities

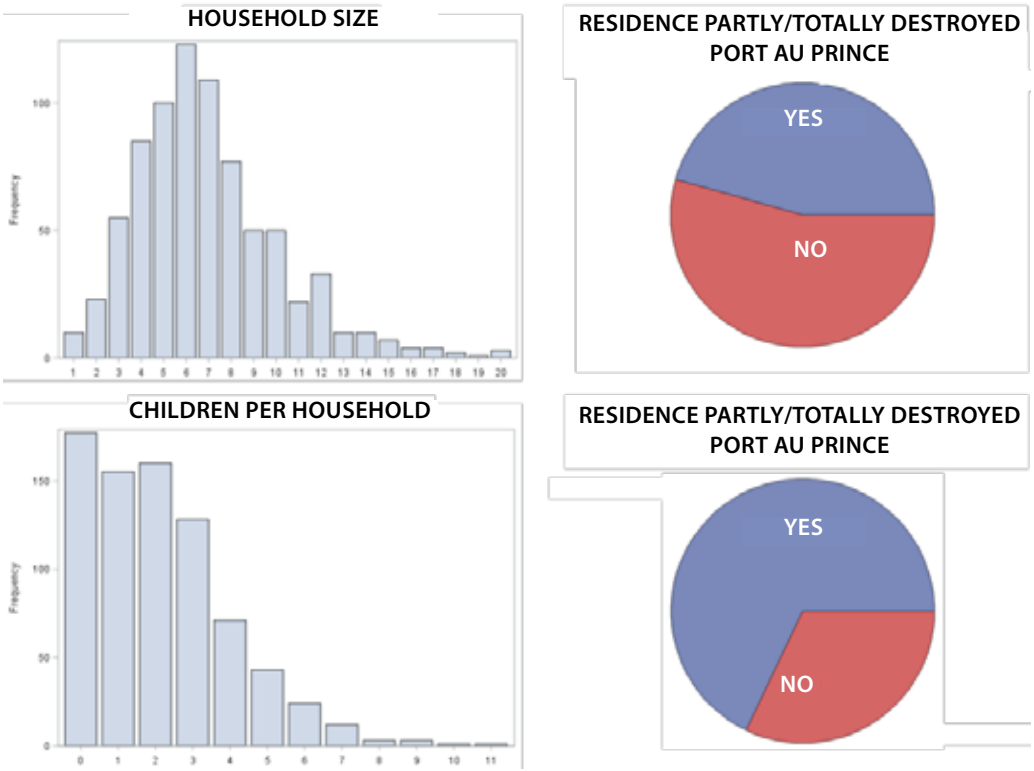
Here are some Data for Good activities and opportunities for this month:

DataKind Webinar *https://goo.gl/G5Hebi* on using data science to fight corruption in the mining industry on January 23 at 11:00 a.m. Eastern / 8:00 a.m. Pacific. Learn about the project and ways to get involved.

Stanford Social Innovation Review *www.ssirdata.org* is hosting the conference Data on Purpose: The Promise and Pitfalls of the Connected World at Stanford February 15–16.

Data Science for Social Good at The University of Chicago is accepting applications for summer fellows, *https://dssg.uchicago.edu,* through January 31.

Summary Statistics on the Impact of the Haitian Earthquake, Compiled from SWB Data



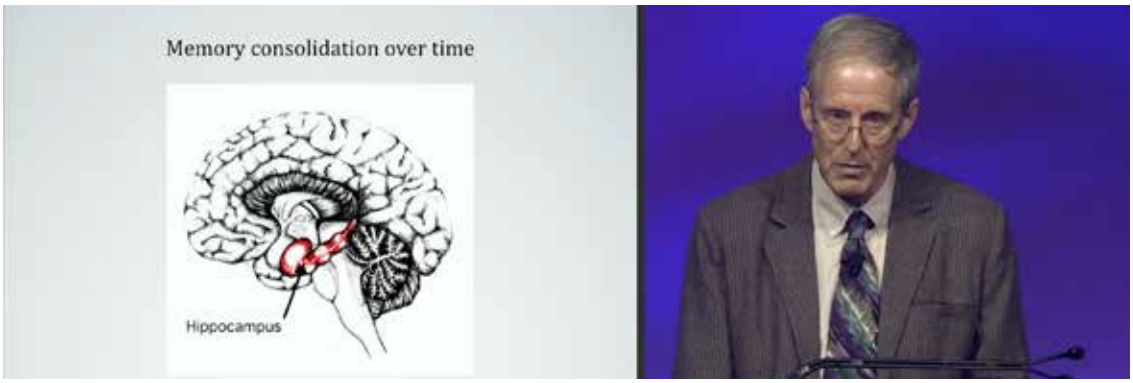
The anonymized data is available for download from Statisticians without Borders' website at *https://goo.gl/iCA5Qy.*

SWB has more than 1,000 volunteers, including the professional sector working on a pro bono basis, academia, students, and retirees. While this is an outreach of the American Statistical Association, membership in the ASA is not required to participate in projects. As an international organization with projects around the world, SWB is especially in need of volunteers fluent in languages other than English and cultural experience and understanding beyond developed nations. In the United States, SWB is active at local and national meetings and conferences, which serve as a focal point for networking, reaching out to new volunteers, and presenting project results.

Another prominent SWB project addressed the needs for data collection in the wake of the 2010 Haitian earthquake. Jean Orelien, a public health researcher and a native of Haiti, noted the lack of organization in the early days of the response to the disaster. Realizing the impact data collection could have on improving outcomes, he contacted the American Statistical Association and Statisticians without Borders became involved. A team of SWB volunteers led by Orelian travelled to Haiti and conducted a survey. While most public infrastructure was badly damaged, cell phone service was still operational. A cell phone survey was used to conduct a survey of living conditions, especially sanitation and potential disease vectors. Returning to the United States to compile and process the data, the SWB team provided the database to governments and NGOs without cost. The anonymized data is publicly available for download from Statisticians without Borders.

Participation in the growing Data for Good movement with organizations like Statistics without Borders, through work or as individuals, provides opportunities to use our technical skills to support the projects and causes we care about the most. Come back to *Amstat News* each month to learn more about Data for Good projects and opportunities. Be inspired by people using statistical science to make the world a better place. ■

Rob Kass: Brain Research Is Underserved by Statistics



Rob Kass gives the R. A. Fisher Lecture at JSM 2017. He spoke on brain science and statistics.

MORE ONLINE
Watch Rob Kass give the R. A. Fisher Lecture at JSM 2017 in its entirety at *https://goo.gl/pq8fJT*.

Brain-related disorders affect almost everyone, either directly or through family or friends. For many of the disorders, whether they're psychiatric or neurological, there are basic scientific descriptions and valuable treatment options, but none has a satisfactory cure because the underlying mechanisms are not fully understood.

The federal government launched the BRAIN Initiative in 2013 to ignite the development and application of new technologies needed for major advances in understanding the brain. Carnegie Mellon University's **Rob Kass** thinks brain research is in desperate need of cutting-edge statistics, which can and should supply a crucial link between new, highly complex data and the thorough scientific explanations the research aims to generate.

As the Committee of Presidents of Statistical Societies' 2017 R. A. Fisher Lecturer, Kass outlined his case in "The Importance of Statistics: Lessons from the Brain Sciences."

"Most people have no idea how advanced statistical thinking can elevate research and accelerate scientific discovery," said Kass, the Maurice Falk Professor of Statistics and Computational Neuroscience in CMU's Dietrich College of Humanities and Social Sciences. "In my lecture, I pointed to some difficulties that arise when statistical ideas are ignored in the analysis of complex neuroscience data."

After illustrating how recordings of neuron activity have played a fundamental role in the brain sciences, Kass gave examples of neuroscience questions that led to interesting statistical problems, and how good solutions to those problems have been guided by the teachings of statistics.

"This lecture eloquently describes the central role of statistics in scientific inference, showing how several modern advances in neuroscience have been built on Fisher's remarkable foundational work in statistics, nearly 100 years ago," said Nancy Reid, university professor of statistical sciences at the University of Toronto.

At CMU, Kass holds faculty appointments in the statistics and data science and machine learning departments and is the interim director of the Center for Neural Basis of Cognition. He is the co-author of *Geometrical Foundations of Asymptotic Inference* and *Analysis of Neural Data*, and has also written widely read articles about statistical education, including, "Ten Simple Rules for Effective Statistical Practice."

The R. A. Fisher Lecture recognizes individuals whose statistical achievements and scholarship have had a highly significant effect on scientific investigations. Kass was honored "for groundbreaking contributions to several areas of statistics, including use of differential geometry in statistical theory as well as theory and methodology of Bayesian inference; for strong commitment to the application of principled statistical thinking and modeling to problems in computational neuroscience; and for his strong dedication to training of students and users of statistics." ■

Many Celebrate NCES During Anniversary Fete

Dynamic." "Growing." "Innovative." These words were among many attendees used to describe the National Center for Education Statistics (NCES) at its 150th anniversary celebration November 15, 2017, on Capitol Hill.

The event, "A Forum for the National Center for Education Statistics: Commemorating 150 Years of Innovation—and Exploring Future Opportunities," featured two congressional speakers and other notable commentators. It drew an overflow audience of more than 100 to the Dirksen Senate Building, as well as more than 200 livestream viewers.

The forum, hosted by AERA, the ASA, and the Council of Professional Associations on Federal Statistics (COPAFS), brought together research and policy experts for a discussion of the pioneering work of the second-oldest federal statistical agency and an exploration of NCES's successes, opportunities, and challenges.

AERA Executive Director Felice J. Levine opened the conversation and introduced audience members to the purpose of the evening.

"We are celebrating and acknowledging the strengths of this federal statistical system throughout the United States," Levine said. "Let's reaffirm our commitment to NCES and the important role it plays in building data and knowledge for policy and practice."

Reps. Paul Mitchell (R-MI) and Suzanne Bonamici (D-OR), who both served on the House Education and the Workforce Committee, helped recognize the past and future efforts of NCES.

"NCES improves the quality of data that it shares with the public," said Mitchell, who gave opening remarks at the forum. "Higher education can help people move their lives forward. It is because of NCES that our work to better serve taxpayers and those undertaking education is enhanced."

NCES Acting Commissioner Peggy G. Carr provided a detailed history of the agency's inception, its progress throughout the last 150 years, and what to look forward to in the future.

"From its modest beginning, NCES continues to be the go-to source for education data in providing reliable, independent benchmarks for states, cities, and institutions across this country," Carr said. "There are opportunities that await us, including our digital data collection that is improving accuracy, access, and inclusion. We are looking forward to the development of these new paths."

The forum was moderated by Levine and included three expert commentators: Jack Buckley of the American Institutes for Research (former NCES commissioner), Larry V. Hedges of Northwestern University (chair of the National Board of Education Sciences), and Bridget Terry Long of the Harvard Graduate School of Education (former chair of the National Board for Education Sciences).

Hedges focused his remarks on the areas of education statistics NCES has made progress in. This includes the enhancement of national and state-by-state academic assessments, the expansion of longitudinal surveys that has provided data for policy analyses and development, and the creation of the standards for international comparative assessments.

"NCES is a national treasure, with staff that is dedicated, hardworking, and utterly professional," Hedges said. "The work of NCES has provided the best longitudinal studies for American education in supporting its growth and development. I hope the years to come are as transformative for the research community as the past 150 years have been."

Buckley continued the discussion with his personal experience serving as NCES commissioner while highlighting past agency publications in showcasing the evolution of American education statistics.

"Working at NCES has been the greatest privilege of my professional life," Buckley said. "I could tell hundreds of stories—stories about the dedicated staff, the historical role of NCES, and its role as a federal statistical agency and contributions to education research and policy. NCES listens to both experts and the public, and that spirit of openness and access has made this statistical agency such an important part of our research and scientific infrastructure."

Long examined specific research findings made feasible by NCES data, along with different innovations throughout the history of the agency. These

included advancing state longitudinal administrative data sets and promoting data collection efforts to better support college students.

"Education is the most important investment that students, parents, our communities, and the government can make. We can't improve education without knowing the data, patterns, and trends, and that is only possible with NCES," Long said. "It's important to realize what we, as researchers and statisticians, wouldn't know without the work of this agency. NCES is the backbone of the innovative and entrepreneurial spirit that many researchers use to find solutions in improving education."

The forum was followed by a reception, where Bonamici—in her welcoming remarks—provided insight on how NCES enhances her policy efforts.

"NCES helps us identify achievement gaps and solutions to address complex equity challenges," said Bonamici. "Education is the key—it's how we grow the economy and advance the jobs of the future. It's important that NCES maintains and continues this work. Thank you for helping inform our policymaking."

Nancy Potok, chief statistician of the United States, spoke and toasted at the ceremony. Also providing comments at the reception were Bill Bushaw, executive director of the National Assessment Governing Board; Brian A. Harris-Kojetin, director of the Committee on National Statistics, National Academ ies of Sciences, Engineering, and Medicine; and John H. Thompson, executive director of COPAFS.

View the photo album at *https://goo.gl/gvPXKD*. ■

While in Trinidad recently, Winston A. Richards—professor emeritus at The Pennsylvania State University—presented the Winston A. Richards Prize in Statistics to **Cheiyenne Seerattan**.

Winston Richards (left) presents a shield and a cash prize to Cheiyenne Seerattan.

This cash prize is awarded to a student who has the best II and III performance in statistics.

The idea for the prize was conceived in 2010 at Richards' 75th birthday celebration when Ingram Olkin of Stanford University gave a series of lectures. ■

Mir Masoom Ali, George and Frances Ball Distinguished Professor of Statistics emeritus at Ball State University, served as the colloquium speaker during a recent World Statistics Day celebration at Ball State.

Ali's talk was titled "History of the Statistics Program at Ball State University." As the founder of the statistics program at Ball State in 1971, he spoke about the success of the students and growth of the statistics program during nearly five decades.

The day ended with a discussion session between Ali and the statistics faculty and students. ■

William F. Rosenberger, university professor and chair of the department of statistics at George Mason University, was named the 15th Armitage Lecturer at the University of Cambridge MRC Biostatistics Unit.

William F. Rosenberger

The Armitage Lecture was the keynote address at the November 9 symposium, dedicated to Peter Armitage's extensive contributions to biostatistics. Rosenberger presented the lecture, "Randomization: The Forgotten Component of the Randomized Clinical Trial." He was also invited to spend two weeks at the unit working with postdoctoral fellows and faculty.

Armitage, who is 93 years old, was unable to attend the lecture, but he was able to watch a videotape of the lecture and sent his best wishes to Rosenberger. ■

Roger Herriott Award Nominations Open

Nominations are sought for the 2018 Roger Herriot Award for Innovation in Federal Statistics. The award is intended to reflect the characteristics that marked Roger Herriot's career, including dedication to the issues of measurement, improvements in the efficiency of data collection programs, and improvements and use of statistical data for policy analysis.

The award is not limited to senior members of an organization, nor is it to be considered a culmination of a long period of service. Individuals or teams at all levels within federal statistical agencies, other government organizations, nonprofit organizations, the private sector, and the academic community may be nominated on the basis of their contributions. As innovation often requires or results from teamwork, team nominations are encouraged.

The award consists of a $1,000 honorarium and a framed citation, which will be presented at a ceremony during the Joint Statistical Meetings in August 2018. The Washington Statistical Society may also host a seminar given by the winner on a subject of his or her choosing.

The recipient of the 2018 award will be chosen by a committee comprising representatives of the ASA Social Statistics and Government Statistics sections and the Washington Statistical Society. Herriot was associated with, and strongly supportive of, these organizations during his career.

Nominations should contain the following:

- A cover letter from the nominator that includes references to specific examples of the nominee's contributions to innovation in federal statistics. These contributions can be to methodology, procedure, organization, administration, or other areas of federal statistics and need not have been made by or while a federal employee.
- Up to six additional letters of support that demonstrate the innovativeness of each contribution.
- A current vita for the nominee with contact information. For team nominations, the vitae of all team members should be included.
- The committee may consider nominations made in prior years, but it encourages resubmission of those nominations with updated information. Completed packages must be received by April 1. Electronic submissions to Mary Batcher, chair of the 2018 Roger Herriot Award Committee, at *marybat10@gmail.com* as Word or PDF files are strongly encouraged.

Roger Herriot was the associate commissioner of statistical standards and methodology at the National Center for Education Statistics (NCES) when he died in 1994. Prior to his service at NCES, he held several positions at the US Census Bureau, including chief of the population division.

For more information, contact Batcher at (202) 327-6773 or *marybat10@gmail.com.* ■

Past Award Recipients

1995 – Joseph Waksberg (Westat)
1996 – Monroe Sirken (National Center for Health Statistics)
1997 – Constance Citro (National Academy of Sciences)
1998 – Roderick Harrison (US Census Bureau), Clyde Tucker (Bureau of Labor Statistics)
1999 – Thomas Jabine (SSA, EIA, CNSTAT)
2000 – Donald Dillman (Washington State University)
2001 – Jeanne Griffith (OMB, NCES, NSF)
2002 – Daniel Weinberg (US Census Bureau)
2003 – David Banks (FDA, BTS, NIST)
2004 – Paula Schneider (US Census Bureau)
2005 – Robert E. Fay III (US Census Bureau)
2006 – Nathaniel Schenker (National Center for Health Statistics)
2007 – Nancy J. Kirkendall (Office of Management and Budget)
2008 – Elizabeth Martin (US Census Bureau)
2009 – Lynda Carlson (National Science Foundation)
2010 – Katharine Abraham (University of Maryland)
2011 – Michael Messner (US Environmental Protection Agency)
2012 – Paul Biemer (RTI International)
2013 – Exact Match Team (Social Security Administration, US Census Bureau, and Internal Revenue Service)
2014 – Longitudinal Employer Household Dynamics Study; Abowd, Haltiwanger, Lane
2015 – Jennifer Madans (National Center for Health Statistics)
2016 – Thesia Garner (BLS) and Kathy Short (US Census Bureau)
2017 – John Eltinge (US Census Bureau)

Nominees Sought for 2018 Gertrude M. Cox Award

The Gertrude M. Cox Award committee is accepting nominations for the Cox Award, established in 2003 through a joint agreement between the Washington Statistical Society (WSS) and RTI International. The award annually recognizes a statistician in their early to mid-career (fewer than 15 years after terminal degree) who has made significant contributions to one or more of the applied statistics areas in which Gertrude Cox (1900–1978) worked: survey methodology, experimental design, biostatistics, and statistical computing.

In 1945, Cox became director of the Institute of Statistics of the Consolidated University of North Carolina. In the 1950s, as head of the North Carolina State College Department of Experimental Statistics, she played a key role in establishing mathematical statistics and biostatistics departments at the University of North Carolina. Upon her retirement from North Carolina State University in 1960, Cox became the first head of the Statistical Research Division at newly founded RTI. She was a founding member of the International Biometric Society (IBS), and in 1949, became the first woman elected into the International Statistical Institute. She served as president of both the American Statistical Association (1956) and IBS (1968–1969). In 1975, she was elected to the National Academy of Sciences.

The award is presented at the WSS Annual Dinner, usually held in June, with the recipient delivering a talk on a topic of general interest to the WSS membership before the dinner.

2018 Award Committee

WSS President Linda Young (co-chair)

WSS Past President Mike Larsen

WSS President-elect Tom Krenzke

Abhik Das, RTI

Phil Kott, RTI

Karol Krotki, RTI (co-chair)

This award is made possible by funding from RTI International, and the recipient is chosen by a six-person committee—three each from WSS and RTI.

The award includes a $1,000 honorarium, travel expenses to attend the WSS Annual Dinner, and a commemorative WSS plaque. Past recipients, in chronological order, include Sharon Lohr, Alan Zaslavsky, Tom Belin, Vance Berger, Francesca Domenici, Thomas Lumley, Jean Opsomer, Michael Elliott, Nilanjan Chatterjee, Amy Herring, Frauke Kreuter, Jerome Reiter, Jae Kwang Kim, Bhramar Mukherjee, and Elizabeth Stuart.

Please email your nominations to Karol Krotki at *kkrotki@rti.org* by February 28, 2018, with a supporting statement and CV (or a link to one).

If you have previously nominated a candidate and you wish that nomination to be reconsidered, please send an update of the supporting materials.

For more information, visit *https://goo.gl/PQgBtp*. ■

Nominate a Colleague for ASA Fellow

The designation of ASA Fellow has been a significant honor for nearly 100 years. Under ASA bylaws, the Committee on Fellows can elect up to one-third of one percent of the total association membership as fellows each year.

Individuals are nominated by their ASA-member peers. To be selected, nominees must have an established reputation and have made outstanding contributions to statistical science. The Committee on Fellows evaluates each candidate's contributions to the advancement of statistical science and places due weight on the following:

- Published works
- Position held with employer
- ASA activities
- Membership and accomplishments in other societies
- Professional activities

To be eligible for nomination, a person must be a current member of the ASA who has held continuous membership from March 1, 2015, to February 28, 2018.

Nominations are accepted each year from October 1 to March 1. Visit *https://goo.gl/R6Znx9* to download a nomination form. ■

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

AWARD	DEADLINE	NOMINATIONS	QUESTIONS
Karl E. Peace Award for Outstanding Statistical Contributions for the Betterment of Society	February 1	*awards@amstat.org*	**Paul S. Albert** *albertp@mail.nih.gov*
ASA W. J. Dixon Award for Excellence in Statistical Consulting	February 1	*awards@amstat.org*	*awards@amstat.org*
Causality in Statistics Education Award	February 15	*educinfo@amstat.org*	*educinfo@amstat.org*
Harry V. Roberts Statistical Advocate of the Year Award	February 15	*awards@amstat.org*	**John Vanderploeg** *vanderp@comcast.net*
ASA Samuel S. Wilks Memorial Medal	February 15	*awards@amstat.org*	**Sanjib Basu** *sanjib.ba@gmail.com*
ASA Waller Distinguished Teaching Career Award	February 15	*awards@amstat.org*	**Bradley A. Hartlaub** *hartlaub@kenyon.edu*
ASA Waller Education Award	February 15	*awards@amstat.org*	**Bradley A. Hartlaub** *hartlaub@kenyon.edu*
ASA W. J. Youden Award in Interlaboratory Testing	February 15	*awards@amstat.org*	**Blaza Toman** *blaza.toman@nist.gov*
ASA Statistics in Physical and Engineering Sciences Award	February 20	**Ming Li** *mli@alumni.iastate.edu*	**Ming Li** *mli@alumni.iastate.edu*
ASA Gertrude M. Cox Scholarship	February 23	*awards@amstat.org*	**Eloise E. Kaizar** *ekaizar@stat.osu.edu*
ASA Edward C. Bryant Scholarship	March 1	*awards@amstat.org*	**Pushpal Mukhopadhyay** *pushpal.mukhopadhyay@sas.com*
ASA Excellence in Statistical Reporting Award	March 1	*awards@amstat.org*	**Alan R. Tupek** *alan.tupek@gmail.com*
ASA Fellows	March 1	Nominations accepted at *www.amstat.org* beginning October 1, 2017	**Keith F. Rust** *keithrust@westat.com*
ASA Mentoring Award	March 1	*awards@amstat.org*	**Jessica M. Utts** *jutts@uci.edu*
ASA Outstanding Statistical Application Award	March 1	*awards@amstat.org*	**Jung-Ying Tzeng** *jytzeng@stat.ncsu.edu*
Statistical Partnerships among Academe, Industry, and Government (SPAIG) Award	March 1	*awards@amstat.org*	**Kelly Zou** *Kelly.Zou@pfizer.com* or **Pam McGovern** *Pam.McGovern@nass.usda.gov*
ASA Founders Award	March 15	*awards@amstat.org*	**Jessica M. Utts** *jutts@uci.edu*

sectionnews

Arizona Chapter Promotes DataFest

Arizona Chapter officers promote a DataFest hackathon to Arizona State University students. From left: vice president Jie (Jane) Pu, treasurer Yongzhao Peng, officers Shuo Jiang and Chantal Jubinville, and president Rodney Jee.

The Arizona Chapter kicked off the academic year with a meeting at Arizona State University in which newly elected chapter officers pitched the ASA's DataFest to students and faculty.

The officers explained to 30 undergraduates from math, business, computer science, industrial engineering, and other majors what a great opportunity it was for them to take part in the 48-hour data hackathon.

Vice president Jie (Jane) Pu of Banner Health referenced past DataFest data to give the students a sense of what an open-ended data analysis task might look like. Officers Shuo Jiang and Chantal Jubinville, both of Discover Financial Services, talked about what student competitors or competition advisers could expect from taking part in the event.

Treasurer Yongzhao Peng of Arizona Heath Services explained that the chapter would take care of all expenses for this DataFest, so the event would essentially be free for them. President Rodney Jee of Discover held pre-registration for the competition and received 22 student entries.

With this strong degree of interest, the chapter will move into preparations for the event by soliciting sponsors, recruiting judges and advisers, arranging for meal service, and working with the university for a date and venue.

The meeting was hosted by John Stufken of the School of Mathematics and Statistical Sciences, which will provide event coordination for the spring competition. ■

sectionnews

Statistics in Physical and Engineering Sciences

A Message from the Chair

James G. Wendelberger, Los Alamos National Laboratory and University of New Mexico

It has been a successful year for SPES. As I mentioned in my January message, SPES was able to partner with other sections to sponsor Joint Statistical Meetings (JSM) 2017 talks and roundtables in Baltimore, allowed other sections to take advantage of our JSM mixer, continued our Marquardt speakers program, co-sponsored the Spring Research Conference (SRC), co-sponsored the Fall Technical Conference (FTC), and provided various awards to our members.

The Spring Research Conference on Statistics in Industry and Technology took place at Rutgers University May 17–19, 2017.

In August, SPES sponsored numerous sessions and roundtables at the 2017 Joint Statistical Meetings. This year, the joint mixer with the Quality and Productivity Section was expanded to include other sections and continued to be full of fun and fabulous door prizes.

The 61st annual Fall Technical Conference was held in Philadelphia October 4–6, 2017. The ASA's 112th president, Barry Nussbaum, gave a luncheon talk, "It's Not What We Said, It's Not What They Heard, It's What They Say They Heard." SPES provided the wine and cheese reception and the conference was a resounding success.

Let us keep the SPES membership growing.

In closing, I would like to thank all the 2017 SPES officers and many volunteers for a successful year. Your dedication and service makes SPES a valuable organization for our members. Thank you for the opportunity to serve as your chair this past year. I wish you all a happy holiday season and continued success in 2018!

Nominations Sought

Ming Li, SPES Awards Chair

The SPES award committee is seeking nominations for the 2018 award. In even-numbered years, the award is presented for distinguished work performed during the previous two years by a collaborative team of statisticians and practitioners in an industrial, manufacturing, or research organization. To be eligible for the award, at least one member of the team must be a member of the ASA and a member of the Section on Physical and Engineering Sciences when nominated.

The deadline to submit nomination letters is February 20. The letters, along with any supporting materials, should be sent to Ming Li, chair of the Statistics in Physical Engineering Sciences Award committee, at *mli@alumni.iastate.edu.* Unpublished work should be described in a format similar to a published paper.

For details, visit *https://goo.gl/iSzH2o.*

Joint Research Conference

Joanne Wendelberger, Council of Sections Representative

The 2018 Joint Research Conference on Statistics in Quality, Industry, and Technology will take place June 11–14 in Santa Fe, New Mexico. It is a joint meeting of the 25th Spring Research Conference on Statistics in Industry and Technology and the 35th Quality and Productivity Research Conference.

The goal of this conference is to stimulate interdisciplinary research and innovative solutions to practical problems through interaction among statisticians, quality professionals, engineers, and scientists from diverse fields. The theme of this year's conference is "The Art and Science of Statistics." The technical program will focus on statistical methodology and creative problem solving to address scientific, industrial, and business challenges, drawing upon advances from the fields of statistics, machine learning, and data science.

The conference will be hosted by Los Alamos National Laboratory and co-sponsored by SPES, the Quality and Productivity Section, and the Institute of Mathematical Statistics.

Further information can be found at *www.cvent.com/d/35qgbh.*

If you are interested in presenting a paper or poster on a topic relevant to Statistics in Quality, Industry, and Technology, email your abstract to *jrc2018@lanl.gov* and indicate your preference for a presentation or poster. The abstract should include the following information:

- Author(s) and Affiliation(s)
- Title of the Presentation
- Purpose of the Presentation (one sentence - i.e., "To inform, motivate, enlighten, etc.")
- A Concise Summary of the Work Done

The deadline to submit abstracts is February 15. For more information, email *jrc2018@lanl.gov* or contact a member of the program committee:

- **Anne Hansen,** *hansenannem@gmail.com* (Contributed Papers Chair)
- **Brian Weaver,** *theguz@lanl.gov* (Program Committee Co-Chair)
- **Xinwei Deng,** *xdeng@vt.edu* (Program Committee Co-Chair)
- **Shane Reese,** r*eese@stat.byu.edu*
- **C. Devon Lin,** *devon.lin@queensu.ca*
- **Matthew Pratola,** *mpratola@stat.osu.edu*
- **Joanne Wendelberger,** *joanne@lanl.gov* (Conference Chair) ■

Biometrics

Edited by Zheyu Wang, Biometrics Section Publications Officer

Abstracts for contributed and topic-contributed papers will be accepted online until February 1. See *https://goo.gl/QEFGNj* for more information.

Call for Proposals

The Biometrics Section invites applications for funding to support projects developing innovative outreach focused on enhancing awareness of biostatistics among quantitatively talented US students. Of particular interest are projects that encourage students to pursue advanced training in biostatistics. Questions should be addressed to Tanya Garcia at *Tpgarcia@sph.tamhsc.edu.*

Graph of the Month

The graph of the month and other topics of broader interest will be moved to a blog post, which can be assessed without logging in to the ASA Community. ■

Statistical Education

The Statistical Education Section navigated a successful JSM 2017 under Section Program Chair Dalene Stangl and Roundtable Chair Kelly McConville, sponsoring or co-sponsoring five invited panels/sessions, nine topic-contributed panels/sessions, six contributed paper sessions, one traditional poster session, one speed poster session, and five roundtables. Also, Carol Blumberg and Rebecca Nichols organized the Statistical Education booth, coordinating with Teaching Statistics in the Health Sciences Section to create a one-stop shop for all things educational.

Slides from many JSM 2016 talks are available on the section's website, and others are being collected from JSM 2017. You can submit these to Brigitte Baldi at *baldib@uci.edu*.

The following six section members were named as new ASA fellows:

- **Sam Behseta,** California State University, Fullerton
- **Joe Fred Gonzalez,** US Department of Health and Human Services
- **Charles Hall,** Albert Einstein College of Medicine
- **Tim Hesterberg,** Google
- **Shonda Kuiper,** Grinnell College
- **Michael Posner,** Villanova University

Contact Nicholas Horton, Fellows Committee chair, at *nhorton@amherst.edu* with nominations, questions, or suggestions for next year.

The section also announced the following education award honorees:

- **Robin Lock,** St. Lawrence University, 2016 Ron Wasserstein Award for Best Contributed Paper, for "Data Surfing on the World Wide Web – Part 2"
- **Kelly McConville,** Swarthmore College, 2016 Statistical Education Section Speed Session Award for "Are Volcanic Eruptions Increasing? An Example of Teaching Data Wrangling and Visualization in Stat 2"
- **Jane Watson,** University of Tasmania, and Lyn English, Queensland University of Technology, 2016 Jackie Dietz Award for Best *JSE* Paper for "Repeated Random Sampling in Year 5"
- **James Cochran,** University of Alabama, 2017 Distinguished Teaching Career Award
- **Anna Bargagliotti,** Loyola Marymount, 2017 Waller Education Award
- **Ann Cannon,** Cornell College, 2017 Mu Sigma Rho William D. Warde Statistics Education Award
- **Nicholas Horton,** Amherst College, 2017 Founders Award
- **Jane Pendergast,** Duke University, 2017 Founders Award

The following items of interest to section members were discussed at the open meeting:

The section's new blog at *https://statisticseducatio.wixsite.com/mysite* provides a modern way to keep up with the latest section news. It is mobile device–friendly, and you can subscribe to receive email notifications. Please send any ideas for posts to Kay Endriss, communications officer, at *ekendriss@gmail.com*.

Registration for the Electronic Undergraduate Statistics Research Conference (eUSR) is open. This free conference will take place November 3 from 12:00 p.m. – 5:00 p.m. EST and is open to all undergraduate students and faculty. This is a great opportunity for students at all stages of their undergraduate career to learn more about undergraduate statistics research. If you have any questions about eUSR, send an email to Kelly McConville at *kmcconv1@swarthmore.edu*.

Resources on eCOTS 2018 (the electronic Conference on Teaching Statistics), taking place May 21–25, will soon appear on *www.causeweb.org/cause/ecots*. Rebecca Nugent is program chair.

The 10th International Conference on Teaching Statistics (*http://icots.info/10*) will take place July 8–13 in Kyoto, Japan. The theme is "Looking back, looking forward." Submission deadlines vary; see *http://icots.info/10/?submissions* for details.

Kelly McConville will chair the section's 2018 JSM program; Stacey Hancock will chair the 2019 JSM program.

Election Results

In the spring 2017 section elections, the following members were elected and officially began their terms January 1:

- **Beth Chance** of Cal Poly, San Luis Obispo, Chair
- **Mine Çetinkaya-Rundel** of Duke University, Chair-elect
- **Matthew Hayat** of Georgia State University, Council of Sections Representative
- **Sharon Lane-Getaz** of St. Olaf College, Executive Committee at Large
- **Cassandra Pattanayak** of Wellesley College, Executive Committee at Large
- **Stacey Hancock** of Montana State University, JSM Program Chair-elect

A detailed handout and minutes from the business meeting will be posted to the section's website at *https://goo.gl/6YMZLX*. ■

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

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

›› Indicates events posted since the previous issue

2018

February

***15–17—2018 ASA Conference on Statistical Practice, Portland, Oregon**
For details, visit *ww2.amstat.org/meetings/csp/2018/* or contact ASA Meetings, 732 N. Washington St., Alexandria, VA 22314; (703) 684-1221; *meetings@amstat.org*.

March

»**2–3—2nd International Conference on Quantitative, Social, Biomedical, and Economic Issues, Athens, Greece**
For more information, visit *icqsbei2018.weebly.com* or contact Christos Frangos, Tepelenioy 7, Herakleion Attikhs, Athens, International 14121, Greece; 00302102833756; *cfragos@teiath.gr*.

April

»**14–15—2018 Spring Workshop: Information, Causal Models, and Model Diagnostics, Pittsburgh, Pennsylvania**
For more information, visit *https://goo.gl/YMLH5V* or contact Arnob Alam, 4400 Massachusetts Ave. NW, Washington, DC 20016; (202) 885-3758; *info-metrics@american.edu*.

»***18—11th Annual University of Pennsylvania Conference on Statistical Issues in Clinical Trials: Estimands, Sensitivity Analysis, and Missing Data in Clinical Trials, Philadelphia, Pennsylvania**
For details, contact Jonas H. Ellenberg, 423 Guardian Drive, Suite 602, Philadelphia, PA 19104; *jellenbe@pennmedicine.upenn.edu*.

May

»**4–6—The 6th Workshop on Biostatistics and Bioinformatics, Atlanta, Georgia**
For more information, visit *https://goo.gl/h5J3Bh* or contact Yichuan Zhao, Department of Mathematics and Statistics, Atlanta, GA 30303; (404) 413-6446; *yichuan@gsu.edu*.

»***6–8—30th Annual Kansas State University Conference on Applied Statistics in Agriculture, Manhattan, Kansas**
For more information, visit *https://goo.gl/3JYT2j* or contact Jo Blackburn, Kansas State University, Department of Statistics, 101 Dickens Hall, 1116 Mid-Campus Drive North, Manhattan, KS 66506; (785) 532-0511; *jablack@k-state.edu.*

»**7–8—Conference on Predictive Inference and Its Applications, Ames, Iowa**
For details, visit *PredictiveInference.github.io* or contact Dan Nettleton, 2115 Snedecor Hall, Ames, IA 50011-1210; (515) 294-7754; *dnett@iastate.edu.*

»***10–11—Two-Year College Data Science Summit, Washington, DC**
For details, visit *https://goo.gl/QxbxGx* or contact Steve Pierson, 732 North Washington St., Alexandria, VA 22314; (703) 302-1841; *pierson@amstat.org.*

»**10–11—ISCCRO'18 - The 2nd International Statistical Conference in Croatia, Opatija, Croatia**
For more information, visit *https://goo.gl/2sqU5E* or contact Ksenija Dumicic, Ilica 3, Zagreb, International HR-10000, Croatia; 98380204; *ksenija.dumicic@hsd-stat.hr.*

»***16–19—Symposium on Data Science and Statistics, Reston, Virginia**
For more information, visit *ww2.amstat.org/meetings/sdss/2018* or contact ASA Meetings, 732 N. Washington St., Alexandria, VA 22314; *meetings@amstat.org.*

CENTER FOR
CLINICAL EPIDEMIOLOGY
AND BIOSTATISTICS

Perelman
School of Medicine
University of Pennsylvania

11th Annual Clinical Trials Conference - Philadelphia, PA

SAVE THE DATE!

Wednesday, April 18, 2018 (8:00 A.M. to 5:00 P.M.)

11th Annual University of Pennsylvania
Conference on Statistical Issues in Clinical Trials:
Estimands, Sensitivity Analysis and Missing Data in Clinical Trials

REGISTRATION OPENS JANUARY 2018

SPEAKERS AND TOPICS

DEVAN V. MEHROTRA Merck	*Recent ICH Guidance on Estimands and Sensitivity Analyses: Why and What?*
THOMAS PERMUTT USA FDA, CDER	*A Regulatory Perspective On Defining Treatment Effects*
JOSEPH G. IBRAHIM University of North Carolina	*Quantifying the Average of the Time-varying Hazard Ratio via a Class of Transformations*
SCOTT S. EMERSON University of Washington	*Analyzing Sensitivity to Data Missing Not At Random (MNAR): A Framework for Design, Analysis, and Reporting*
DANIEL SCHARFSTEIN Johns Hopkins University	*A Causal Inference Perspective on the Proposed ICH-E9 Addendum*

PANELISTS

ANNE LINBLAD	EMMES Corporation
RODERICK J. LITTLE	University of Michigan School of Public Health
GEERT MOLENBERGHS	Universiteit Hasselt and Katholieke Universiteit
FRANK ROCKHOLD	Duke University, Duke Clinical Research Institute
JAY SIEGEL	Retired (formerly FDA and Johnson & Johnson)
ERIC T. TCHETGEN	University of Pennsylvania
ANDREA B. TROXEL	New York University Langone Health

June

»**11–15—ISNPS2018, Salerno, Italy**
For details, visit *www.isnps2018.it* or contact Marcella Niglio, Via Giovanni Paolo II, 132, Fisciano (SA), International 84084, Italy; +39 089962651; *isnps2018@unisa.it*.

»**17–20—International Symposium on Forecasting, Boulder, Colorado**
For more information, visit *isf.forecasters.org* or contact Pam Stroud, 53 Tesla Ave., Medford, MA 02155; (781) 234-4077; *isf@forecasters.org*.

»**24–29—ISBA 2018, Edinburgh, United Kingdom**
For more information, visit *bayesian.org/isba2018* or contact Diane Horberry, 15 South College St., Edinburgh, International EH8 9AA, UK; 0044 (0) 131 650 9831; *isba2018@maths.ed.ac.uk*.

July

»**2–6—6th International Statistical Ecology Conference, St. Andrews, Scotland**
For details, visit *www.isec2018.org* or contact Claudia Faustino, CREEM, University of St. Andrews, Fife, Scotland, International KY16 9LZ; +4401334 461 842; *isec2018@st-andrews.ac.uk*.

»**9–11—Data Science, Statistics, and Visualisation (DSSV 2018), Vienna, Austria**
For details, visit *iasc-isi.org/dssv2018* or contact Peter Filzmoser, Wiedner Hauptstrasse 8-10, Vienna, International 1040, Austria, +43 664 605881051, *dssv2018@gmail.com*.

»**16–21—The 28th Annual Conference of the International Environmetrics Society (TIES 2018), Guanajuato, Mexico**
For more information, visit *ties2018.eventos.cimat.mx* or contact L. Leticia Ramirez-Ramirez, Jalisco SN Col Valenciana, Guanajuato, International 36023, Mexico; *ties2018@cimat.mx*.

16–20—33rd International Workshop on Statistical Modelling, Bristol, United Kingdom
For more information, visit *www.statmod.org/society.htm* or contact Simon Wood, School of Mathematics, Bristol, International BA2 6BS, UK; *simon.wood@bath.edu*.

»**16–20—CBMS Conference on Elastic Functional and Shape Data Analysis, Columbus, Ohio**
For details, visit *stat.osu.edu/cbms-efsda* or contact Sebastian Kurtek, Department of Statistics, Ohio State, Columbus, OH 43210; (614) 292-0463; *kurtek.1@osu.edu*.

***28–8/2—2018 Joint Statistical Meetings, Vancouver, Canada**
For more information, visit *ww2.amstat.org/meetings/jsm/2018/index.cfm* or contact ASA Meetings, 732 N. Washington St., Alexandria, VA 22314; (703) 684-1221; *meetings@amstat.org.*

August

»26–30—ISCB ASC 2018, Melbourne, Australia
For details, visit *iscbasc2018.com* or contact Arinex Pty Ltd, 91-97 Islington St., Collingwood, International 3066, Australia; *iscbasc2018@arinex.com.au.*

September

»8–10—The Third Workshop on Higher-Order Asymptotics and Post-Selection Inference (WHOA-PSI), St. Louis, Missouri
For more information, visit *https://goo.gl/LC5Uf2* or contact Todd Kuffner, Campus Box 1146, 1 Brookings Drive, St. Louis, MO 63131; *kuffner@wustl.edu.*

October

»25–27—Big Data Meets Survey Science (BigSurv18), Barcelona, Spain
For details, visit *www.bigsurv18.org* or contact Antje Kirchner, 3040 E. Cornwallis Road, Research Triangle Park, NC; (919) 316-3328; *info@bigsurv18.org.* ■

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

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

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

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

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

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

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

Arizona

■Northern Arizona University invites applications for a tenure-track assistant professor in statistics available August 2018. Minimum qualifications include a doctorate in statistics or biostatistics expected by August 20, 2018 and teaching experience at the college level. Evidence of high quality teaching and strong potential for a productive research program are preferred. Review of applications begins October 02, 2017. See *https://goo.gl/U7rnVH.* NAU is an AA/EEO/M/W/D/V employer.

California

■Department of statistics and applied probability, University of California, Santa Barbara invites applications for a tenure track open level professor position in statistics with emphasis on data science; starting 7/1/2018. Qualifications: research/teaching excellence; PhD in statistics, biostatistics or related fields. Candidates who can contribute to the diversity of excellence of the academic community through research, teaching and service are encouraged to apply. *https://goo.gl/5tt4Pm.* EO/AA employer.

District of Columbia

■The department of mathematics and statistics at American University in Washington, DC, invites applications for a tenure-line assistant professor position in statistics, beginning in August 2018. We welcome researchers in all areas of Statistics. We are open to researchers who ignore traditional disciplinary boundaries. Apply at *mathjobs.org*. Applications submitted by December 1 will receive full consideration. American University is an equal opportunity, affirmative action institution.

Florida

■The department of mathematics and statistics at the University of North Florida (UNF) invites applicants to apply for a tenure-track assistant professor of statistics position. An interested candidate must submit her/his electronic application on the *https://goo.gl/PJapge*. Application review will begin January 15th, 2018. Applications will be accepted until the position is filled. UNF is an equal opportunity/equal access/affirmative action institution.

■The department of statistics at Florida State University invites applications for a Teaching Faculty I position starting August 2018. A PhD in statistics, biostatistics, or a related field is required. The primary duty will be to teach undergraduate and graduate SAS courses and online courses. Apply at *https://jobs.fsu.edu/* (job ID 42595). Review of applications begins January 15th and continues until the position is filled. E.O.E.

Indiana

■One faculty position (rank commensurate with experience/qualifications), department of biostatistics/Indiana University School of Medicine/Indianapolis. Duties: statistical research, teaching, collaborative research. PhD in biostatistics, statistics or related field, excellent communication skills required; practical experience preferred. Competitive salary/excellent benefits. Submit CV, research/teaching statements, 3 references to: *https://goo.gl/J3y5Jh.* Indiana University is an EEO/AA employer, M/F/D/V

Iowa

■The department of statistics at Iowa State University is seeking candidates for one open-rank tenure-track faculty position. The appointment will be affiliated with the Center for Statistics and Applications in Forensic Evidence. Duties of a successful candidate will include statistics research related to forensic sciences, undergraduate and graduate teaching, graduate advising, and professional and institutional service. The complete position posting at *https://goo.gl/oJqemK.* Iowa State University is an equal opportunity/affirmative action employer.

Kansas

The Department of biostatistics at the University of Kansas Medical Center is recruiting an assistant professor rank faculty member who will be responsible for collaborative research, independent research, teaching and mentoring. The department consists of 12 Ph.D. statisticians, 4 teaching associates, 12 staff members and over 50 graduate students. To apply go to *https://jobs.kumc.edu* and search position 01201654. Kansas University Medical Center is an equal opportunity employer

Department of mathematics, University of Kansas invites applications for a non-tenure-track, visiting assistant professor position in probability expected to begin as early as August 18, 2018. For a complete announcement and to apply online, go to *https://goo.gl/acq8Gc*. Submit recommendation letters to *https://goo.gl/vS5hG7*. Initial review of applications will begin December 31, 2017. KU is an EO/AAE, full policy *https://goo.gl/Dje3Ea*.

Maryland

The mathematics department at the United States Naval Academy invites applications for one or more tenure-track appointments in Statistics, beginning August 2018. A qualified candidate must be a U.S. citizen and have a PhD in an appropriate field. Successful candidates are committed to both teaching and research. See our official job postings at *https://goo.gl/aUZnp9* for details about the job and requirements (including a background investigation). The US Naval Academy is an equal opportunity employer.

The FDA Center for Biologics Evaluation and Research (CBER) seeks biostatisticians to work on review and research for vaccines, blood products, and advanced therapeutics such as gene therapies. Potential research topics include innovative clinical trial design, biomarkers, meta-analysis, and data standards. CBER-regulated products touch the lives of every American and address critical public health needs. Please refer to the following announcement for more details: *http://easyurl.net/87053* EOE.

Massachusetts

The Department of Mathematical Sciences at Bentley University-an independent, private business-oriented university located in suburban Boston-invites applications for a tenure track position beginning fall 2018. The rank and salary will be commensurate with experience. Senior appointments will be considered. Must hold a PhD in statistics or related discipline. Application instructions: In order to apply to this position, please submit an online application directly to *http://jobs.bentley.edu/postings/3200.* Bentley University is an equal opportunity employer, building strength through diversity. The university is committed to building a community of talented students, faculty and staff who reflect the diversity of global business. We strongly encourage applications from persons from underrepresented groups, individuals with disabilities, covered veterans and those with diverse experiences and backgrounds. We strive to create a campus community that welcomes the exchange of ideas, and fosters a culture that values differences and views them as a strength in our community.

Michigan

The department of biostatistics at the University of Michigan is seeking applicants for a tenure-track assistant professor faculty position for fall 2018. Candidates must have a strong research background with a doctoral degree in biostatistics, statistics, mathematics, the computational sciences or a related field. Candidates will be expected to develop an outstanding research and teaching program. For further details, visit *https://goo.gl/Baowxe.* The University of Michigan is an affirmative action/equal opportunity employer. Applications from women and minorities are welcomed and strongly encouraged.

Henry M. Goldman School of Dental Medicine

Boston University Henry M. Goldman School of Dental Medicine invites applicants for a full-time Biostatistician Faculty position, Open Rank. Responsibilities involve teaching, mentoring, data analysis, and service. The successful candidate will: 1) provide expert statistical consultation on study design, implementation, analysis and the preparation of protocols, grants and manuscripts for multiple projects; 2) plan and oversee analyses for many types of data and studies; 3) train faculty, residents and students in biostatistics and study design and 4) provide curriculum development and instruction in biostatistics at the pre-and post-doctoral levels.

Requirements include: an earned PhD in Biostatistics or Statistics, proficiency with SAS, SPSS, Stata, R, and/or S-plus, previous experience teaching at the graduate level as a course leader and developing course(s), peer-reviewed publications, experience mentoring student research, minimum of three years of experience collaborating with experimental and clinical investigators, experience in study design and data analysis for a wide range of experimental, observational, clinical and longitudinal studies, experience with analysis of large medical data bases, experience in participating in externally funded grant projects.

The ideal candidate will have the ability to work autonomously on several different projects with a range of investigators across a variety of clinical disciplines. Excellent oral and written communication skills are required. Salary and rank will be commensurate with experience. Candidates must be available to begin employment on July 1, 2018.

Application materials should be addressed to Dr. Belinda Borrelli, Chair of the Search Committee, and include a cover letter describing how the candidate's qualifications and interests fit the position description, CV, teaching statement, and names of 3 professional references, emailed to **Ms. Lisa Case (*Case@bu.edu*)**. Applications will be reviewed on a rolling basis until the position is filled.

The Henry M. Goldman School of Dental Medicine is located within the Boston University Medical Campus in Boston's South End and offers faculty robust opportunities for collaboration, advanced training, professional development and career growth.

Boston University is an equal opportunity employer and all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, age, national origin, physical or mental disability, sexual orientation, gender identity, genetic information, military service, or because of marital, parental, or veteran status or any other characteristic protected by law. Boston University is a VEVRAA Federal Contractor.

Fox School of Business
TEMPLE UNIVERSITY®

Department of Statistical Science
Tenure-Track Faculty Positions in Statistical Science

The Department of Statistical Science at Temple University invites applications for multiple positions to begin in July 2018. The search is open to all faculty ranks. Candidates are expected to maintain an active and rigorous research program in statistical science. A research focus on Statistical Data Science with interdisciplinary applications and collaborations are highly desirable. Responsibilities include teaching, research, and doctoral student research supervision. The preferred qualifications for the Assistant Professor position include post-doctoral or previous faculty experience with a strong publication record. Salary is highly competitive and commensurate with qualifications. To apply, please visit *www.fox.temple.edu/cms_academics/dept/statistics/recruiting.*

Non-Tenure Track and Adjunct Faculty Positions in Statistical Science/Business Analytics

The Department of Statistical Science at Temple University invites applications for non-tenure research track, non-tenure teaching track, and adjunct faculty positions to begin in July 2018. Candidates must hold a Ph.D. degree (for the research track) or a master's degree (for the teaching track/part-time adjunct), and must have a strong background in data analytics, statistics, or a closely related field. Teaching responsibilities include introductory, as well as advanced level statistics courses, visualization, and data mining. Temple University has a well-defined career path for non-tenure track (NTT) faculty. At Temple, NTT faculty can lead, get promoted, and become administrators. Salary is highly competitive and commensurate with qualifications. Applications will be accepted until the positions are filled. To apply, please visit *www.fox.temple.edu/cms_academics/dept/statistics/recruiting.*

Missouri

Missouri University of Science and Technology is seeking statisticians who excel in interdisciplinary research to advance our campus signature area of smart living, which seeks to improve the human living condition by enhancing the integrated system of people, technology and the environment through collaborative research. Appointments are available at the associate professor and assistant professor levels. Job details and application procedure are given at *https://goo.gl/BgfZAn.* Missouri S & T is an AA/EEO institution. Females, minorities, and persons with disabilities are encouraged to apply. Missouri S&T participates in E-Verify. For more information on E-Verify, please contact DHS at 1-888-464-4218.

New Jersey

Paul and Marcia Wythes Center on Contemporary China of Princeton University seeking full time research scientist (associate or more senior research scholar). Duties include analysis of multiple large datasets: coordinating, designing, implementing, and reporting on the results; research design; teaching and training; publication writing for journals, etc. PhD and excellent Mandarin-Chinese required. Full description and application at: *https://goo.gl/5gdbbm* (position number: D-18-PII-00005) by 2/2/18. Questions? *ybennett@princeton.edu*. Princeton University is an equal opportunity/affirmative action employer and all qualified applicants will receive consideration for employment without regard to age, race, color, religion, sex, sexual orientation, gender identity or expression, national origin, disability status, protected veteran status, or any other characteristic protected by law.

The Paul and Marcia Wythes Center on Contemporary China Princeton University seeking a postdoctoral or more senior research associate for the 2018-19 academic year. Must have received a PhD within the past three years and studies aspects of contemporary Chinese society from a social

science disciplinary perspective. Full description and application at: *https://goo.gl/J3yEfM* (position number: D-18-PII-00004). Questions? *ybennett@princeton.edu.* Princeton University is an equal opportunity/affirmative action employer and all qualified applicants will receive consideration for employment without regard to age, race, color, religion, sex, sexual orientation, gender identity or expression, national origin, disability status, protected veteran status, or any other characteristic protected by law.

New York

■Seeking a graduate in biostatistics, statistics, or bioinformatics, interested in statistical cancer genomics, for a postdoctoral position to work on large-scale sequencing data from local and public resources. Send cover letter, cv and contact information for 3 references to Katherine Cheung (for Drs Colin Begg and Ronglai Shen) at *wongk1@mskcc.org*: Memorial Sloan Kettering Cancer

Center, 485 Lexington Avenue, New York, NY 10017. EOE.

Ohio

■Applied statistics & operations research: Associate/full professor of applied statistics—chair, Bowling Green State University. Tenured faculty position available August, 2018. For details including responsibilities, minimum qualifications, and information on how to apply, please visit *https://bgsu.hiretouch.com/* or contact the office of human resources, BGSU. Application deadline is January 31, 2018. AA/EEO/disabilities/veterans. Bowling Green University is an AA/EEO/disabilities/veterans.

Pennsylvania

■The Wharton statistics department, University of Pennsylvania, seeks a postdoctoral researcher in statistics and/or probability. The position is for two years beginning in summer 2018, with a possible extension to three. The primary focus is for the scholar to develop her/his research. A light teaching load is involved. A PhD is required. Please visit our website to apply: *https://goo.gl/j99BxV*. Please direct questions to *stat.postdoc.hire@wharton.upenn.edu*. The University of Pennsylvania is an EOE. Minorities/women/individuals with disabilities/protected veterans are encouraged to apply.

■The Wharton statistics department, University of Pennsylvania, seeks a postdoctoral researcher to be supervised by Professor Eric Tchetgen Tchetgen. The position is for two years beginning in January 2018, or soon thereafter, with a possible extension to three years. A PhD in statistics, biostatistics, epidemiology, or a related field is required. Please visit our website to apply: *https://goo.gl/D1S7NQ*. Please direct any questions to *ett.postdoc@wharton.upenn.edu*. The University of Pennsylvania is an EOE. Minorities/women/individuals with disabilities/protected veterans are encouraged to apply.

■The Wharton statistics department, University of Pennsylvania, seeks applicants for a full-time, tenure-track assistant professor position, appointment beginning July 2018. Applicants must show outstanding capacity and achievement in research, along with excellent teaching skills. Applicants must have a PhD (expected completion by June 30, 2019 is acceptable) from an accredited institution. Please visit our website to apply: *https://goo.gl/p71ngj*. Questions can be sent to *statistics.recruit@wharton.upenn.edu*. The University of Pennsylvania is an EOE. Minorities / women/individuals with disabilities/protected veterans are encouraged to apply.

Virginia

■Old Dominion University — the department of mathematics and statistics is seeking 2 tenure-track assistant professors starting fall 2018 in computational statistics or data science. A PhD in statistics, biostatistics or related fields and serve

the university's new initiative in big data analytics and data science. Apply at *https://goo.gl/P58iRp* Review of the applications will begin December 15, 2017 and continue until the positions are filled. EOE.

Washington

The departments of biostatistics and epidemiology at the University of Washington have one post-doctoral position available. The successful candidate is expected to work with a team of epidemiologists, biostatisticians, and computer scientists at the National Alzheimer's Coordinating Center (NACC). Appointment will be for two years. PhD required in statistics, biostatistics, or mathematics. To apply, send CV, transcripts, and three letters of reference to *connorm@uw.edu*. EOE.

香港中文大學
The Chinese University of Hong Kong

Applications are invited for:-

Department of Statistics
Professors / Associate Professors / Assistant Professors
(Ref. 1700024E)

The Department of Statistics invites applications for two faculty posts at all levels. Appointment rank will be determined by the qualifications and experiences of the successful candidate.

Applicants should have (i) a Ph.D. in statistics or a related field; and (ii) high-quality research output and a strong teaching track record in all areas of statistics and risk management science.

Appointments will normally be made on contract basis for up to three years initially commencing August 2018, which, subject to mutual agreement, may lead to longer-term appointment or substantiation later. Outstanding candidates with substantial experience for Professor rank may be considered for substantive appointment forthwith.

Review of applications will commence from January 5, 2018, and will continue until the posts are filled. Further information about the Department is available at http://www.sta.cuhk.edu.hk.

Application Procedure

Applicants should complete the online application form and upload a cover letter, a full curriculum vitae, a statement of research and teaching interests, and copies of up to five recent publications by January 5, 2018. Applicants should also arrange for three letters of recommendation to be sent to statdept@cuhk.edu.hk.

The University only accepts and considers applications submitted online for the posts above. For more information and to apply online, please visit http://career.cuhk.edu.hk.

Assistant/Associate Professors of Biostatistics
Harvard T.H. Chan School of Public Health

The Department of Biostatistics at the Harvard T.H. Chan School of Public Health seeks outstanding candidates to fill two tenure-track positions at the assistant or associate professor level. We seek candidates with a strong background in statistical theory and methodology, demonstrated expertise in development of new biostatistical methods, and an interest in collaborative research in public health and biomedical science. Candidates should have the potential to become leaders in the development and application of statistical methods in health sciences and should also be enthusiastic about teaching, training, and mentorship through our graduate programs. Responsibilities will include methodological and collaborative research, teaching, and supervision of graduate students. Candidates are required to have a doctorate by the time the appointment begins, and academic rank will be determined in accordance with the successful candidate's experience and accomplishments.

The Department of Biostatistics offers an exceptional environment to pursue research and education in statistical methods while being at the forefront of efforts to benefit the health of populations worldwide. Our faculty are leaders in the development of statistical methods for the design and analysis of clinical trials and observational studies, missing data, causal inference, precision health, network analysis, statistical genetics and genomics, neurostatistics, and environmental statistics. Our innovative approaches to computational biology, quantitative genomics, and the analysis of massive health-related data are strengthened by a deep foundation in theory and application. Our unique community provides unparalleled collaborative opportunities with academic departments across Harvard, the Dana-Farber Cancer Institute, and other world-class Harvard affiliated hospitals.

Please apply to: *https://academicpositions.harvard.edu/postings/7937*
For questions, please contact: Chair, Search Committee for Assistant/Associate Professor of Biostatistics
c/o Susan Luvisi
Department of Biostatistics
Harvard T.H. Chan School of Public Health
Email: *biostatjrsearch@hsph.harvard.edu*

The Harvard T.H. Chan School of Public Health seeks to find, develop, promote, and retain the world's best scholars. We are committed to upholding the values of diversity, equity, and inclusion in our school and the communities we serve.

Harvard University is an equal opportunity employer and all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, national origin, disability status, protected veteran status, or any other characteristic protected by law.

Information on resources for career development and work/life balance at Harvard T.H. Chan SPH can be found at: *http://hsph.me/resources-career-development-and-work-life-balance.*

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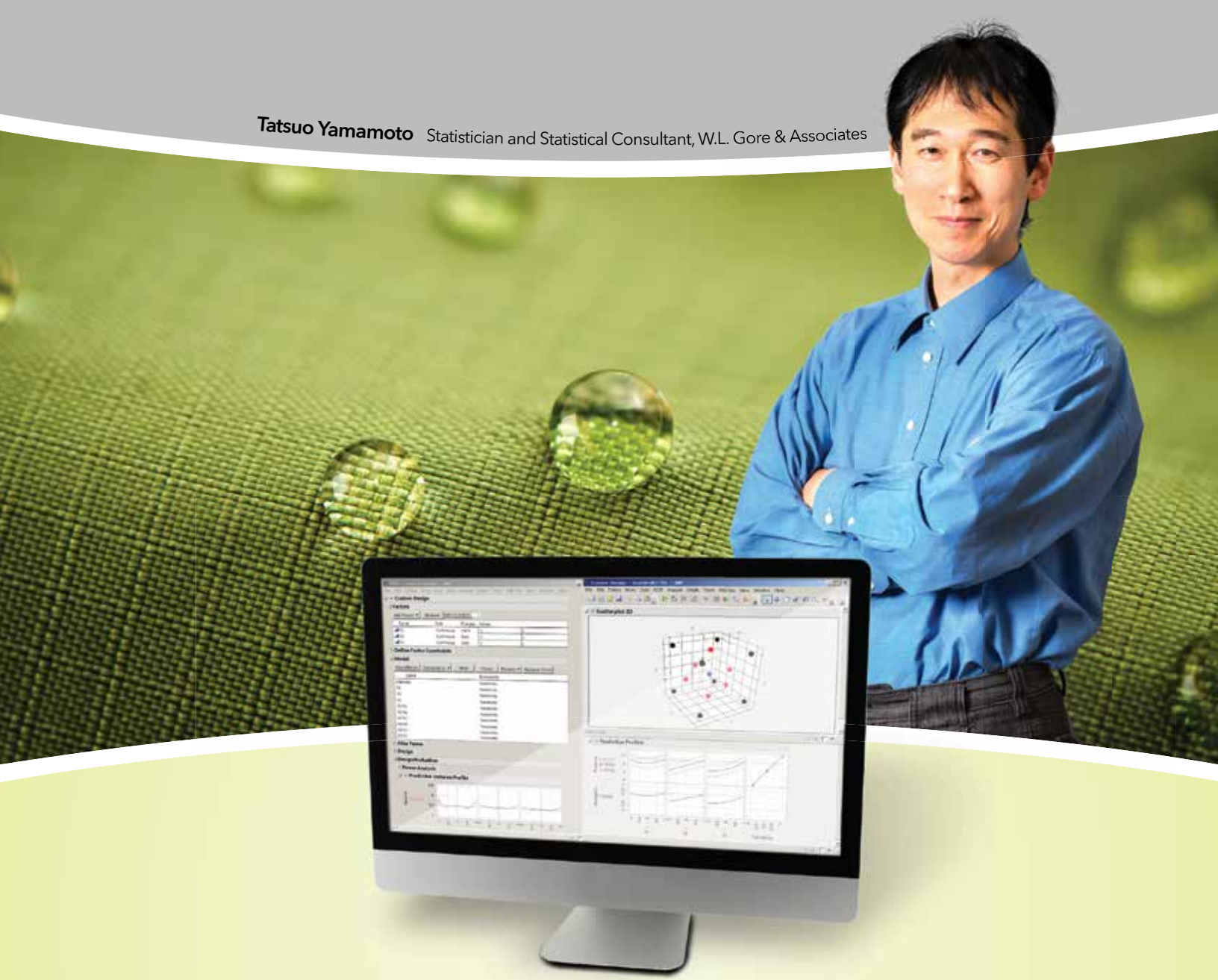

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