

November 2018 • Issue #497

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- 16 **PASTIMES OF STATISTICIANS**  
**What Does Gerry Hahn Like to Do When He Is Not Being a Statistician?**

This column focuses on what statisticians do when they are not being statisticians. If you would like to share your pastime with readers, please email Megan Murphy, *Amstat News* managing editor, at [megan@amstat.org](mailto:megan@amstat.org).

- 18 **STATS4GOOD**  
**Data for Good Researchers Respond to Hurricanes**

This column is written for those interested in learning about the world of Data for Good, where statistical analysis is dedicated to good causes that benefit our lives, our communities, and our world. If you would like to know more or have ideas for articles, contact David Corliss at [davidjcorliss@peace-work.org](mailto:davidjcorliss@peace-work.org).

- 21 **STATtr@k**  
**ASA/NCHS Fellow Bridges Gap, Reaps Rewards**

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



Larry Lesser of The University of Texas at El Paso repurposed Sting's 1983 #1 (and Grammy-winning) hit, "Every Breath You Take," to tell the story of the problem whose discussion in the 17th century sparked foundations of probability theory and expected value.

## Divvy Up the Stakes

Lyrics © 2017 Lawrence M. Lesser

For a two-man game  
where chances are the same  
to win each frame,  
you just play the game to a score agreed to.  
If you take a break,  
divvy up the stakes.  
For fairness' sake,  
you may only take what is due to you.

Now we did see in 17th-century:  
Pascal and Fermat gave a solution they made

Well, their letters say  
just how many ways  
the unfinished frames  
could have been played and how odds accrue.

Problem solved, thanks to Pascal and Fermat,  
but there is more that their answer did unlock:  
Just look around at the theory that we use  
of probability and its allied tools.  
Let's rejoice this problem of the points ...

Divvy up the stakes  
for an unfinished game:  
For fairness' sake,  
you may only take what is mu for you.

# departments

## 22 meetings

CSP 2019 Promises Real-World Experience

JSM 2019 Invited Program Set; Other Avenues for Contributing Open



New Orleans, Louisiana  
February 14–16 **2019**

The 2019 Conference on Statistical Practice offers real-world experience for attendees.  
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## Leading Large ... or My Dinner with Dennis

After nearly a year's worth of President's Corners devoted to training, encouraging, and honoring leaders, I am using this month's column to profile a statistician who, in every sense of the word, has spent his life leading large. Dennis Gillings is described as a "British-born American billionaire statistician and entrepreneur" on Wikipedia. A graduate of Exeter University, he was professor of biostatistics at The University of North Carolina and the founder and former chair of Quintiles, the world's largest clinical research organization. Among accolades too numerous to name, he was made commander of the Order of the British Empire in 2004. His career is nothing short of spectacular, and statisticians aspiring to be strong and impactful leaders would do well to take note of his leadership story.

I had occasion to sit down with Dennis and talk about his views on statistics, data science, and drug development, catching him during an October visit to Chapel Hill to honor Gary Koch. Gary was celebrating 50 years as a biostatistics faculty member in the Gillings School of Global Public Health at UNC—a school named for his close friend and colleague.

In 2000, Mike O'Fallon was ASA president and invited Dennis to give the JSM President's Invited Address in Indianapolis. I was then Quintiles vice president of biostatistics for North America, and my job was to make sure Dennis—and his PowerPoint presentation—made it to the podium on time.

I don't think anyone in the audience was prepared for the message delivered that day. Dennis challenged the audience to consider changing our profession's name from *statistics* to *information science*, arguing we were at risk of losing out on the bioinformatics revolution taking place at the intersection of statistics, computer science, and genetics. We were too narrowly focused and needed to be more inclusive and accepting of other scientists interested in quantitative evaluation of information.

Dennis' address took place on the Monday afternoon of JSM, and for the next three days, it seemed all anyone was talking about was his challenge. Not everyone agreed with our taking a new direction as a profession, much less a new name. But everyone heard the challenge and was reacting to it. If the purpose of a JSM address is to get people thinking, his was a tremendous success!



Gary Koch and Dennis Gillings

My first question during our interview was to ask how—18 years later—he viewed the data science movement relative to the field of statistics in terms of training, skill sets, and job markets. Here are a few of his comments in response:

- Big data are ever more important—the driving force behind the actions of many large companies today. Quintiles' 2016 merger with IMS and the formation of the combined venture, IQVIA, is an example of this phenomenon.
- Companies are interested in recruiting workers with data management skills, computer search skills, and expertise in descriptive data analysis and regression methods. There is a need to be able to report what the data are telling us, going beyond tests of prespecified hypotheses. Skills in cluster analysis and pattern recognition, as well as data visualization, are important for this purpose, as are model building and sensitivity analyses.
- The use of big data brings with it the need to assess generalizability and data quality.



Lisa LaVange

Photo by Jon Gardiner/UNC-Chapel Hill

Requiring a protocol prior to initiation can help, but findings may still need to be validated through other data sources and/or research.

- Real-world data studies offer an opportunity to impose design structures on the data at hand, particularly if they are longitudinal. Bias assessment/reduction are important, and the analytical skills required may be more aligned with the field of epidemiology. Dennis alluded to the relevance of a 1966 lecture he attended while at the University of Cambridge contrasting randomization and matching as argued by R.A. Fisher and others. Just as clinical trials rely on randomization, real-world data studies rely on matching—and statisticians need expertise in both.
- Big data are often deeper than data from controlled experiments, genetics data being one example, and their analysis requires us to rethink the multiple comparisons problem.

In summarizing his responses to this first question, Dennis commented that the traditional model of training statisticians to develop methodology and identify data sets for illustration purposes needs to be expanded. Statisticians today must be able to apply a broad array of analytic methods that can clarify problems in big data and identify possible solutions, with the ultimate goal of capitalizing on the vast amounts of information in these complex and deep data sources.

My second question to Dennis concerned his view of the state of drug development—what improvements are needed, especially in difficult-to-study areas such as Alzheimer’s disease? I was interested in his views based not only on his Quintiles experience, but also on his appointment in 2014 by UK Prime Minister David Cameron to be the world dementia envoy and chair of the World Dementia Council. Here are some of his comments in response:

- One lesson learned from his experience as world envoy came from interactions with early-onset patients. Knowing their life expectancy was short, and being fully aware of the quality of life they could expect, patients expressed to him their willingness to take risks with experimental drugs. Taking a patient’s individual benefit-risk calculation into account would be a departure from the current drug development paradigm, but perhaps it is time to explore that approach, at least for predictable diseases. I commented on the

FDA’s current emphasis on patient-focused drug development as an example of a trend moving in that direction.

- Another lesson learned was that patients’ caregivers and family members can offer extremely valuable information. Involving them in daily diary data collection can allow subtle but persistent trends in individual disease trajectories to be detected, often more easily than from observations and interactions during regularly scheduled clinic visits. Speaking from personal experience in caring for his mother—who suffered from Alzheimer’s disease—Dennis noted day-to-day trends often gave a more consistent picture of the impact of the disease than did the highly variable responses at fixed data collection time points.
- The conventional phase 1 to 2 to 3 development paradigm is breaking down somewhat in rare diseases. Probationary approval of drugs has seen limited use, but should be expanded—especially when dealing with rare diseases or diseases with no good solutions. Pharmaceutical sponsors could move more quickly to a definitive study that would support probationary approval. The study could rely on biomarkers or intermediate outcomes, and here is where the caregiver/family member diaries might play a role. Once on the market, the use of big data could play an important role, particularly in evaluating the generalizability of earlier studies.

In summarizing our discussion, Dennis had this to say: “The way of the future for drug development in rare diseases will be a higher proportion of drugs subject to conditional approval, with real-world data studies providing valuable information post-approval.”

A theme of my JSM president’s address was the impact strong statistical leaders have had on my career and the need for the ASA to help grow more leaders for the future. By sharing these highlights from my recent conversation with Dennis Gillings, I hope you will be inspired as much as I have been by someone who has had a clear vision for making the world a better place through statistics!



# Thomas R. Ten Have Symposium Is Forum for Discussion, Networking

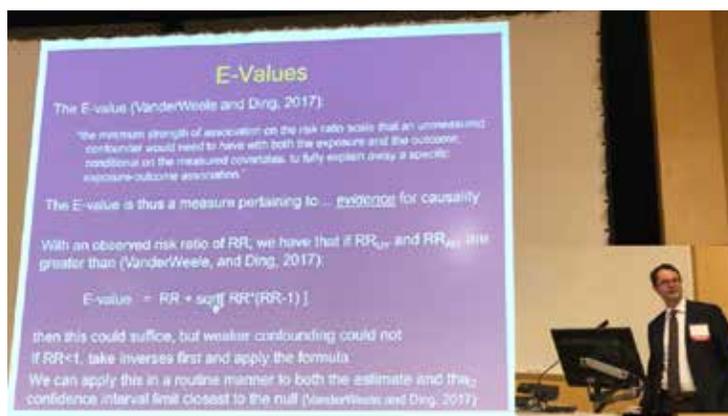
Christine Mauro and Samprit Banerjee

A group of statisticians, biostatisticians, and mental health researchers descended upon the windy city of Chicago to discuss the impending statistical challenges of mental health research during the 7th Annual Thomas R. Ten Have Symposium on Statistics in Mental Health June 8–9.

The keynote presentation by Tyler VanderWeele of the Harvard School of Public Health was discussed by Naihua Duan of Columbia University and focused on assessing mediation, interaction, and causation in the associations between religious service attendance and suicide. VanderWeele introduced a measure called the “E-value” that measures how robust an association is to potential unmeasured or uncontrolled confounding in observational values. The E-value is defined as the minimum strength of association that an unmeasured confounder would need to have with both the treatment and outcome to fully explain away a specific treatment-outcome association, conditional on the measured covariates. There was also speculation that the E-value had the potential of becoming a seminal statistical contribution and a tool to be widely used by the biomedical research community due to the ease of its interpretation and computation.

Other presentations on the first day were given by Danny Almirall of the University of Michigan, Susan Paddock of RAND Corporation, Haiqun Lin of Yale University, and Ian Barnett of the University of Pennsylvania and spanned topics in mixed-effects modeling in dynamic treatment regimes, causal inference for dynamic groups, multiple mediation analysis with latent groups, and change point detection in digital phenotyping.

The day ended with a joint poster session and happy hour. Several posters were presented by an eclectic group of emerging mental health researchers (graduate students and post-docs), established researchers, and faculty members. Dinner at the Beatrix restaurant and lively discussion at a local Irish bar wrapped up the evening.



Tyler VanderWeele gives the keynote presentation, which focused on assessing mediation, interaction, and causation in the associations between religious service attendance and suicide.

The second day of the conference began with a group breakfast and networking. Presenters included Hendricks Brown of Northwestern University, Sherri Rose of Harvard University, Melanie Wall of Columbia University, and Mengling Liu of New York University and spanned presentations about the design of implementation trials, computational health economics and clinical informatics, empirical methods for detecting optimal diagnostic criteria, and mediation analysis with censored time-to-event mediator.

The symposium was hosted by Northwestern University Feinberg School of Medicine, cosponsored by the ASA’s Mental Health Statistics Section, and organized by Juned Siddique—former chair of the ASA Mental Health Statistics Section. This annual event was founded in 1999 by Thomas R. Ten Have and Eva Petkova as a forum for statisticians working in psychiatric research and, more generally, mental health research to discuss ideas about new statistical methodologies and challenges. Thomas Ten Have passed away in 2011. To honor his many statistical contributions to mental health research, the symposium was renamed the Thomas R. Ten Have Symposium on Statistics in Mental Health. ■

# P&C Committee Discusses Privacy Protections for Transportation Data in Big Data Environment

*The presenters talked about methods for protecting privacy interests in large data sets*

The Privacy and Confidentiality (P&C) Committee organized an invited session at the 2018 Joint Statistical Meetings that focused on protecting participants' privacy in large-scale transportation studies. Jacob Bournazian of the Energy Information Administration and former chair of the P&C committee organized the session. Stephanie Shipp of the University of Virginia chaired the session, and Tom Krenzke of Westat discussed the papers.

As background, transportation data include detailed spatial and temporal information collected from roadside sensors, vehicles, mobile phones, and navigation devices. Identifying the travel behavior of individuals, families, and communities is an important part of traffic management and planning. These transportation data also support the research, analysis, and planning of transport systems and future planning for building transportation infrastructure. However, collecting, accessing, or releasing information that identifies an individual's travel patterns without his or her knowledge or consent may cause privacy violations under existing laws, even if the information is used for a larger social benefit.

The four presenters described current and proposed application of methods for protecting privacy interests in large transportation data sets and the benefits and privacy risks associated with researchers accessing these data for statistical use in a big data environment.

The first paper, presented by William Bachman and co-authored by Krenzke and Jane Li—all at Westat at the time—presented the results of a literature review and their evaluation of privacy protection

methods for common transportation data-collection technologies such as fixed sensors and mobile sources. Their conclusions are that guidance on legal responsibilities is lacking, the “universal” one-time privacy protection method is not realistic without reducing data utility, and specific data uses require specific disclosure control algorithms, which they discussed in the context of geospatial data anonymization methods. Their recommendations are to minimize raw data access and protect personally identifiable information (PII), as well as use pseudoidentifiers and nonspecific attributes that can be combined to identify PII. They also recommend eliminating uniqueness of the location or trace data using k-anonymity principles of aggregation, perturbation, suppression, etc.

The next three papers focused on privacy protection using data from the second Strategic Highway Research Program (SHRP2). In this program, 145 research projects focused on safety, renewal, reliability, and capacity were conducted from 2006 to 2015. For more information about SHRP2, see <https://bit.ly/1nipQZR>.

Miguel Perez, director of the Center for Data Reduction and Analyses Support at the Virginia Tech Transportation Institute, described naturalistic driving studies, the types of data collected, and the use and potential abuse of the data. Data from naturalistic driving studies, such as SHRP2, are collected in privately owned vehicles using unobtrusive instrumentation so participants drive as they normally would. No experimenters are present. The objectives of the study are to provide detailed pre-crash information, real-life behaviors, and rich databases for research. Through examples of case studies, Perez highlighted uses of the data such as analyzing the start and stop locations of car trips (e.g., home to shopping by distance), typical commuting patterns and the effects of disruptions, and crash and near-crash risks.

Crashes generate a lot of paperwork, some of which is publicly available. Perez's recommendations to facilitate researcher access to the data while

ensuring participant privacy are to replace videos of faces with avatars that retain behaviors and expressions but remove identifying features and/or to code the behaviors so the video is no longer needed.

Christian Richard of Battelle presented potential frameworks to assess and manage participant disclosure risk. He and his coauthors developed a framework for assessing data set utility and privacy risk, identified approaches for protecting privacy while maintaining utility, and conducted a pilot test of the framework on potential public use data sets (PUDs). The authors created three PUDs on different topics: (1) driving events that include summary variables for individual crashes and variables describing roadway characteristics at event locations; (2) trip summaries with approximately 5.5 million trip records that contain summary information about each trip; and (3) travel density maps that include GIS shape files and tables that contain the number of participants and trips for each road segment. Each PUD was implemented with strong privacy measures.

Applying the NIST 2015 Data Privacy Framework, the authors performed threat modeling, evaluated reidentification risk, applied transformations, performed diagnostics, and then re-evaluated the risks and utility tradeoffs. They found that a modified version of NIST 2015 framework can be applied to the development of SHRP2 Naturalistic Driving Study PUDs, but each PUD has unique requirements so additional signoffs to use the data may be needed. They also found there are established technical approaches for quantifying risk and utility, transforming data sets, and evaluating the risk-utility tradeoff that can be applied to SHRP2 PUD development. However, they concluded the unknown privacy risks with SHRP2 data are still too high to move forward with a PUD model at this time.

Suzie Lee is a project director at the Center for Data Reduction and Analysis Support at the Virginia Tech Transportation Institute. She described the current procedures to allow researcher access to the SHRP2 data to balance participant privacy protection with data utility. The SHRP2 data provide information about 1,800 crashes, 6,900 near crashes, and 5.4 million trips involving 3,000 participants. Two approaches are used to provide data. Both procedures require institutional review board (IRB) approval and ethics training.

The first is to carve out subsets of high-interest data and make it easily and widely available using an InSight website. The second process allows users

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Transportation data include detailed spatial and temporal information collected from roadside sensors, vehicles, mobile phones, and navigation devices. Identifying travel behavior ... is an important part of traffic management and planning.

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to specify subsets of data on specific topics and to be issued data use licenses and extractions of data that meet their specifications.

Privacy is protected by restricting use of identifying data to a secure data enclave, and nonidentifying data are securely exported. There are strong administrative controls and consequences for violations. Detection algorithms are set up to prevent users from submitting false or incorrect credentials or scraping the data.

To date, 3,000 distinct users have used the InSight website to conduct their research and there have been more than 200 data use licenses issued that allow researcher access to subsets of the data.

Tom Krenzke summarized the session by highlighting the advances in privacy protection evident at the session. He mentioned the European Union's General Data Protection Regulation, a regulation in EU law on data protection and privacy for all individuals within the European Union (see <https://bit.ly/2O8UDjU>), stating that it—and other such regulations—may create paralysis by disclosure analysis without further guidance because of the number of rules and requirements required to protect data. He liked the general approach the Virginia Tech Transportation Institute is taking to allow the SHRP2 data to be used for analysis via the data tool, while maintaining control of the actual data and satisfying the bulk of data users and analyses. He highlighted the risk-utility tradeoff, emphasizing the need for researcher training, ethical behavior, and consequences if rules are violated. ■

# Statistics Student Awarded Truman Scholarship

President Truman did not want to be remembered with a statue. Instead, he encouraged a living memorial that would give life to the values of service that animated his career. The hallmark of the Truman Foundation's work is the Truman Scholarship, a graduate fellowship in the United States for those pursuing careers as public service leaders.

Mikaela Meyer, a member of the American Statistical Association, was awarded a Truman Scholarship to support her graduate studies in public policy. She was given the award of \$30,000 while completing her undergraduate degree in statistics at Purdue and recently began her pursuit of a joint PhD in statistics and public policy at Carnegie Mellon University.

Below, Mikaela answers a few questions about the Truman Scholarship and her plans.

## Who or what drew you to major in statistics at Purdue?

I took AP Statistics in high school and really enjoyed it because I liked the real-world questions that were asked. When I realized as a freshman math major that I probably wouldn't enjoy studying theoretical math topics as much as I originally imagined, I added a statistics major because I remembered this AP Statistics class. I stayed in statistics thanks to a particular professor, Dr. Mark Ward, who introduced me to statistics research early on.

## What has been your biggest take-away from being a Truman Scholar?

Public service can take a variety of forms. There are people in



Mikaela Meyer, a Carnegie Mellon University PhD student, was awarded the Truman Scholarship while finishing her undergraduate degree in statistics at Purdue University.

my cohort who hope to go to medical school, others want to run for office, and some hope to stay in academia. Even though no one else in my cohort comes from a statistics background, people really respect the work I have done and what I hope to do in the future. After spending a summer with my cohort during the Truman Scholarship Foundation's Summer Institute program, I have been inspired to continue working across disciplines to solve grand challenges.

## What advice can you offer statistics majors thinking about applying?

Personally, I found the application process itself so rewarding that—even if I hadn't won the Scholarship—I would have still learned a lot from it. For the application, I had to write specific essays about what I hoped to get out of grad school, what I wanted to do immediately after grad school, and what I wanted to

do seven years after finishing grad school. I had certainly thought about all these topics before, but writing about my future and talking to my advisers about it made my trajectory a little more solid. Also, while writing my essays, my professors connected me to other statisticians who were doing the work I hoped to be doing in the future. Talking to statisticians who are public servants inspired me to continue pursuing my goals.

## Part of the Truman program is its Summer Institute in DC. You found an internship at the US Government Accountability Office (GAO), an independent nonpartisan agency that investigates on behalf of Congress how the federal government spends taxpayer dollars. How did you spend your time at GAO?

At GAO, I enjoyed assisting a couple of the statisticians on some very different projects. My work seemed to run the gamut.

I helped conduct interviews; reviewed others' R and SAS code; and searched for articles for a literature review, among other jobs. One of the most interesting parts of my internship was having the opportunity to sit in on the different meetings GAO holds throughout the duration of their review of a federal program; I saw reviews being discussed at their initial stages and watched the results of a review presented at a congressional hearing.

### Did anything surprise you—or what struck you—about the role of a statistician at GAO?

Before interning there, I didn't realize a GAO statistician is somewhat of a consultant to numerous projects at one time. I witnessed statisticians trying to explain to GAO review teams the pros and cons of different sampling methods and to write about their findings accurately. I recognize now, more than before my internship, the importance of having good communication skills as a statistician, so you can talk to people with different backgrounds and varying levels of technical skills about why taking certain steps ensures proper data collection and analysis.

### Is there an intersection of statistics and public policy that you hope to explore further in graduate school?

I find the topics of "fair" machine learning/AI and record linkage to be interesting, and I'd certainly like to explore them in grad school. Most of my undergraduate work involved using statistics to solve environmental policy problems, so I think it would be interesting to dive deeper into this intersection, as well.

If you or a student you know is interested in learning more about the Truman Scholar program, visit [www.truman.gov](http://www.truman.gov). ■

## THE AMERICAN STATISTICIAN HIGHLIGHTS

# November Issue Has Something for Everyone

Daniel R. Jeske, *TAS* Editor

The November 2018 issue of *The American Statistician* features 13 articles and one letter to the editor that span a range of interesting methodology and application areas. In keeping with the mission of *TAS*, there is something for everyone in this issue.

The General section begins with an article that develops Bayesian inference for Kendall's rank correlation coefficient. It is interesting how this can be done in the absence of an explicit likelihood function.

A second article investigates alternative ways to linearly transform a vector of random variables into uncorrelated random variables. We might have in mind a way to do it, but odds are many of us have not thought about the alternative ways to do it that are described in this paper.

The next paper in this section presents surprising inference contexts where it is better to use the raw data than it is to use the sufficient statistics.

A fourth paper reports on a survey regarding the practices of authors who use simulation studies in their research and highlights what should be improved.

The General section concludes with a paper that introduces an alternative measure of (income) inequality and compares it to the well-known Gini coefficient.

That Statistical Practice section includes two papers. The first advocates for the use of shift alternatives when testing hypotheses and considers them in the context of using Wilcoxon's signed-rank test. The second suggests modifications to boxplots that improve their applications to skewed data.

We have three articles in the Teacher's Corner. The first proposes specific ways to teach critical thinking skills in an introductory statistics class, with the goal being to improve statistical literacy and prepare students to be better decision-makers.

The second article outlines an approach to teaching ethics in the context of a graduate-level statistics class and includes specific connections to the ethical guidelines (<https://bit.ly/2pFw5jX>) prepared by the ASA.

The final article in this section describes a Bayesian analysis of survival times of popes, offering a pedagogical example that might effectively appeal to students learning Bayesian modeling for the first time.

Two short technical notes are also part of this issue. The first provides additional discussion on nonecological applications where Taylor's Law relating the variance and mean of a distribution applies. The second uncovers an equivalence between  $t$ -tests and information criteria when doing model selection in regression contexts.

There is one article in the Data Science section that identifies and discusses three important skills to be developed in a graduate-level data science course and, further, discusses desirable characteristics of individuals who would be charged with developing that class.

The November issue concludes with a letter to the editor that complements an earlier *TAS* article by presenting a particularly lucid derivation for a condition that characterizes when the sign of a regression coefficient will change with the addition of an additional covariate in the model. ■

### MORE ONLINE

To read this issue of *TAS* and find information about submitting your work, visit <https://bit.ly/2ulbVlf>.

# 1000 Girls, 1000 FUTURES:

## New York Academy of Sciences' Mentoring Initiative

1000 Girls, 1000 Futures, launched by the New York Academy of Sciences' Global STEM Alliance (GSA) in 2015, encourages women ages 13–18 interested in science, technology, engineering, and math (STEM) to advance their pursuit of STEM careers through skill development and mentoring. The mission of 1000 Girls, 1000 Futures is to create a supportive female global network to inspire and combat the challenges girls face pursuing STEM studies and careers. The academy just launched its fourth year of programming, and—to date—the program has reached more than a thousand young women in more than 50 countries.

### Program Mentors



**Jessica Lavery** is a research biostatistician at the Center for Health Policy and Outcomes at Memorial Sloan Kettering Cancer Center in New York. She has an undergraduate degree in statistics from Loyola University and a master's degree in biostatistics from The University of North Carolina at Chapel Hill. This is her first year as a mentor in the 1000 Girls, 1000 Futures program.



**Jasmine Williams** is an informatics consultant at ActiveHealth Management in New York. She has an undergraduate degree in mathematics from CUNY Hunter College and a master's degree in biostatistics from Columbia University. She is a strong advocate for diversity and inclusion in STEM. This is her first year as a mentor in the 1000 Girls, 1000 Futures program.

### Mentors' Perspective

**Jasmine:** After my grandmother's passing a little over a year ago, I wanted to lend my voice as a tribute to her. In more ways than one, this mentoring experience served as a small piece of therapy.

Mentoring has been a goal of mine since participating in CSIBS (Columbia Summer Training in Biostatistics) in 2013; however, I didn't think I was at a stage in my journey/career to offer sound advice.

I later learned about 1000 Girls, 1000 Futures through the WISC (Women in Science at Columbia) community newsletter and immediately applied. I was fearful of not being accepted and doubted I had something to offer a young woman on her STEM journey while still figuring out my own.

I've grown and learned so much about myself through this experience. While working through the modules with my mentee, there was so much I had learned from my previous mentors, as well as things I had to learn on my own, and my worries subsided. I've been impressed with content and the amazing women in this community who are doing wonderful work in STEM with so much rigor and passion.

I recommend any woman in whatever field and/or stage of life to lend a voice because you never know what others need to hear to affirm themselves and push forward.



Photo courtesy of NYAS

From left: Tsion Tesfu Abebe, Sriya Lingampalli, Marianna Nerantzinis, Sharon Lin, Zoe Porter, Hannah Strang, and Tina Wong participate in 1000 Girls, 1000 Futures as mentees.

**Jessica:** Around this time last year, a colleague forwarded me an email about the 1000 Girls, 1000 Futures mentoring program. Immediately, my interest was piqued, but self-doubt kept pushing itself forward. Was I qualified to be a mentor? What wisdom (if any) could I impart to a girl interested in STEM?

Fast forward to today and I am coming away from my first year in the program with improved coaching and leadership skills, the knowledge that I have had a positive effect on my mentee, and connections to a network of women in STEM around the world.

I was matched with Asmaa Ibrahim, a high-school student interested in combining her love of art and mathematics into a career in architecture. To say we were a successful match in the program because I imparted any kind of wisdom into Asmaa would do injustice to the amount I have learned from her.

The thoughtfully designed curriculum makes it easy for someone who has never worked in a mentor role to get up to speed and engage in meaningful conversations with her mentee. Building the foundation of our relationship on the program curriculum,

## Program Manager



**Martika Parkinson** is the program manager of the 1000 Girls, 1000 Futures program at the New York Academy of Sciences in New York City. She has an undergraduate degree in psychology from Kean University and is pursuing a master's in educational technology at Ramapo College. Through the New York Academy of Sciences' Global STEM Alliance, Parkinson's focus is on retaining more students in the STEM pipeline and inspiring the next generation of STEM leaders.

we quickly grew comfortable with each other and our conversations expanded to broader topics such as language, culture, family, and friendship.

Looking back, I realize my initial fears about participating are common among mentors, and I am grateful to the 1000 Girls program for giving me and other mentors the confidence to share our experiences with the next generation of women in STEM.

## Program Mentees



**Emma Neillie** is a first-year mentee in the 1000 Girls, 1000 Futures program. She is 15 years old and lives in Scotland. She developed an interest in STEM at the age of about 10 and has participated in many events and programs relating to STEM. She also likes to spend time on music—she plays violin and piano and sings—sports such as netball, and volunteering in her community.



**Asmaa Ibrahim** is a 17-year-old from Egypt. She is in grade 11 in a secondary official language school in Suez City. She has a strong interest in engineering and mathematics. Her ambition is to pursue a career in architecture. This is her first year as a mentee in the 1000 Girls, 1000 Futures program.

## How to Get Involved

The academy is looking for role models to make a difference in the lives of young women. Mentoring in the 1000 Girls program requires a commitment of three hours per month and can be done anywhere, as all activities take place online.

Female STEM mentors work with mentees on 21st-century skills such as communication, leadership, and college readiness.

Applications for both mentors and mentees can be found at [NYAS.org](http://NYAS.org). Applicants will be selected by January 14, 2019, and the program will run from February through October of 2019.

## Mentees' Perspective

**Emma:** I was a first-year mentee in the 1000 Girls, 1000 Futures program this year. My experience as a mentee provided me with insight into the STEM world and the endless prospects it offers girls and women. In this program, I was lucky to be paired with a mentor who was dedicated to the program and our mentor/mentee relationship and who gave me amazing advice and information to help guide me not only through the program, but through the next few years as I am starting the process of exams soon.

Initially, I was unsure of what skills I would learn and what information I would be provided with. After participating in the modules, the discussion boards, and the live events, I would highly recommend this program to any girl interested in STEM. In the seven months I have been part of the 1000 Girls, 1000 Futures, I have learned about academic readiness and setting goals, developed my leadership and conflict resolution skills, improved my communication skills, and furthered my networking abilities. I am currently gaining more knowledge about design thinking and critical thinking, which I now know is crucial to the career path I wish to go down. These are so important to have in STEM, and I would advise getting involved in this program to start to develop these skills or develop them further.

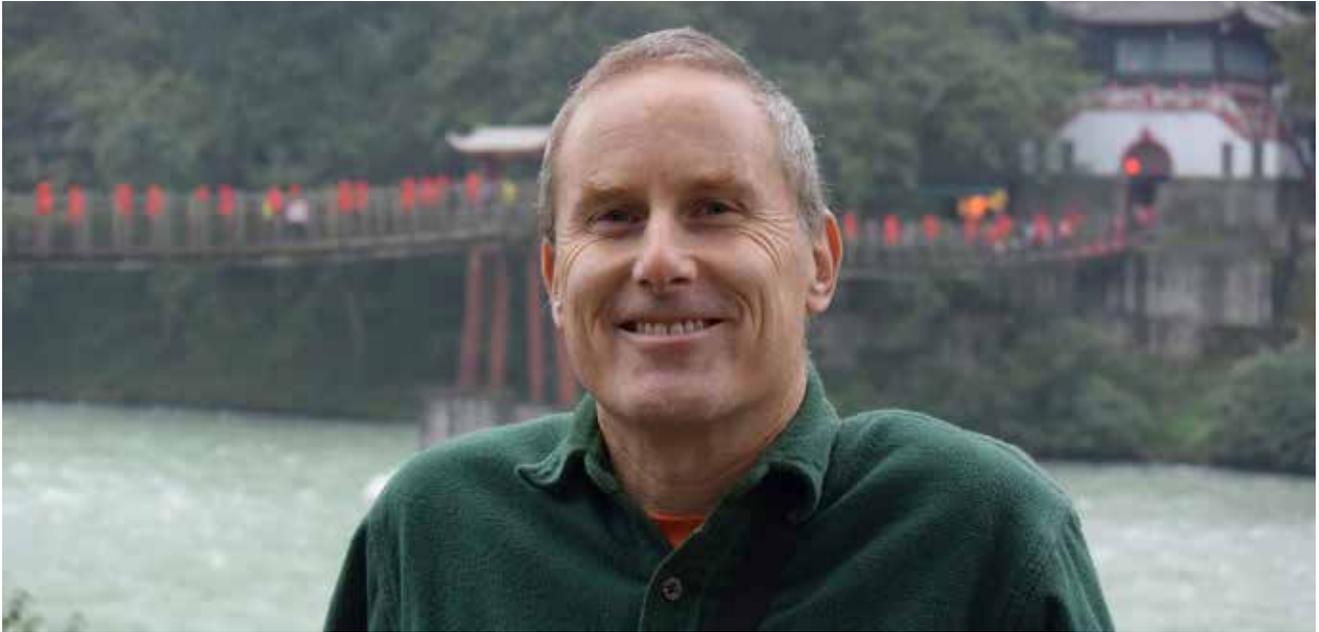
The 1000 Girls, 1000 Futures program has opened my eyes to all the different possibilities in STEM and the skills and strengths that will help me get to where I want to go. It has also given me the

chance to gain a friend for life in my mentor, and I am extremely grateful for that.

**Asmaa:** My name is Asmaa Ibrahim. I'm from Egypt and I am 17 years old. My sister suggested I apply for the 1000 Girls, 1000 Futures program. At first, I wasn't so excited, but I registered for the program as an experience and opportunity I shouldn't miss, lest I regret it later. I was afraid the program may take much of my studying time for the educational year. In fact, it didn't just teach me things I will never learn at school, but it also taught me things that will help me improve my educational level and future career. The program provides a community for girls from all over the world who are similar and have the same goals of improving their skills and preparing for the university life. It is a great experience, and I am glad to be part of this community.

The program provides a mentor for each girl. I think this is the most useful part of the program. The importance of this part differs from one mentor to another, but without a doubt, I was lucky to have such a mentor. It was a great opportunity to have a mentor from a different country with a different language, but we almost have the same personality. After each meeting, I became more active and full of positive energy. She has a great effect on my self-confidence and always makes me believe in myself.

Additionally, the program gave me a great chance to improve my English. In the end, I see that the program has an academic and psychological benefit for every girl in it. ■



Christopher Schmid is professor in and chair of the department of biostatistics at the Brown University School of Public Health. He is a fellow of the American Statistical Association and served as chair of the Health Policy Statistics Section in 2013 and co-chair of the International Conference on Health Policy Statistics in 2008 with his longtime friend and colleague Joseph C. Cappelleri, who interviewed him here.

## Christopher Schmid Talks Health Statistics

Joseph C. Cappelleri, Pfizer Inc.

### *Family and Schooling*

#### **Where did you grow up? Tell me about your upbringing.**

I grew up in Bethesda, Maryland, and attended college at Haverford, where I majored in mathematics. I was interested in statistics, so I went to work as an actuary for a couple of years at Prudential Reinsurance, but I did not like working in the insurance industry and decided to go to graduate school in statistics. I earned a PhD at Harvard and, while I was there, I worked at BBN Software as a trainer for its software. This was a great teaching experience, as I would visit clients who had purchased the software and give 2-4-day courses in statistics and experimental design.

#### **When did you discover your passion for mathematics and statistics?**

I became interested in statistics through sports. As a kid, I was

a sports fanatic, and I knew all the numbers on baseball, basketball, and football. I learned my decimals through batting averages. For my entrance essay for the PhD at Harvard, I chose to write about Bayesian shrinkage using the paper Carl Morris and Brad Efron wrote in *Scientific American* in 1977 about baseball batting averages. I thought the idea was very cool.

#### **Please share your experiences at Haverford College and Harvard University.**

At Haverford, I did a standard math degree and took a couple of courses in statistics. I took many courses in the humanities and social sciences, which is where I really learned how to write. It helps me write better grants and allows me to advise students and colleagues on their writing. At Harvard, I studied with many brilliant students from other

countries, so I learned a lot about different cultures, but I also made a lot of wonderful friends and developed professional relationships with people who are leaders in the field. I learned quickly to know my place in the pecking order.

#### *Tufts University School of Medicine/New England Medical Center*

#### **What led to your job there?**

When I finished my degree, I was looking for a job in the Boston area because I was married and had two small children and we wanted to stay near my wife's family. I was looking for a research job at the time. I was not interested in teaching. I took a job at Tufts-New England Medical Center and started working on developing predictive models for patients who had heart attacks and were candidates for thrombolytic therapy. We also

had a small consulting service that eventually grew much bigger. Through that, I got involved in working with a lot of clinicians. Soon after I got to Tufts, fellow faculty member Joseph Lau received a substantial grant on meta-analysis and I started working with him and with you, Joe. That started a long and fruitful collaboration of many years and developed into many grants that led to the development of new methods and software.

### **What were some of your major studies and methodological advances?**

The thrombolytic predictive instrument was an interesting study because we developed five logistic regression models to predict the risk of mortality at 30 days and one year, the probability of having a cardiac arrest, the probability of needing a blood transfusion, and the probability of having a stroke. These probabilities were printed at the top of an electrocardiogram (ECG) to help clinicians determine when and when not to provide thrombolytic therapy. The manufacturer, Hewlett-Packard, implemented this in their ECGs. Thrombolysis is effective in reducing mortality for some people, but there are also complications of stroke and major bleeding. Our models looked at treatment interactions, as well as factors that change the baseline probability, so we could advise clinicians properly on the risks involved.

I also did a lot of work with the nephrology department at Tufts. We did individual participant data meta-analysis looking at the effects of ACE inhibitors (which lower blood pressure) on risk in patients with non-diabetic renal disease to determine whether the benefit is due to blood pressure reduction or other causes. We also put together databases to construct better predictive models for estimating

glomerular filtration rate (GFR), which is the amount of waste the kidney can process. It is the primary endpoint of interest to many clinicians in determining the extent of kidney disease in patients, but it is hard to measure exactly, so our predictive models used surrogates like creatinine, which could be more easily measured, along with demographics like age, sex, and race. These models are used all over the world now in laboratories when creatinine is measured to get a prediction of GFR. They are also used in all the renal disease research that looks at GFR.

In meta-analysis, we developed several important programs to speed up the process of doing systematic literature reviews and carried out several statistical methods assessments in the Tufts Evidence-Based Practice Center. Over the years, I developed relationships with scientists in ecology and other disciplines and eventually joined the Society for Research Synthesis Methodology (SRSM), which includes interdisciplinary experts in meta-analysis. We meet each year, and we also publish the journal *Research Synthesis Methods*, for which I am one of the two founding coeditors.

### *Brown University*

### **What new opportunities did you find?**

Along with my colleagues Joseph Lau and Tom Trikalinos, I started the Center for Evidence-Based Medicine (now Center for Evidence Synthesis in Health) at Brown in 2012. We were looking for a university environment, one that had students with whom we could do research. When I got to Brown, I also joined the department of biostatistics and was able to start teaching graduate students. Before then, I had been teaching medical doctors about statistics as part of the Tufts master's program in clinical research that I helped start

and worked with for almost 20 years. At Brown, I instead started to train statisticians. I directed the master's program at Brown for my first four years.

### **What have been some of your major accomplishments?**

Having seen the importance of teaching doctors how to do statistics, I realized how important it was to teach statisticians how to collaborate with doctors. Communication is so important. Statisticians need to be able to discuss statistical concepts and write clearly. The first course I taught was a consulting course in which I brought in both doctors and statisticians to talk about how to collaborate—including you, Joe. I also brought in speakers from the outside to talk to all our students, and we started the practice of bringing alumni back to talk about their experiences working in the “real world.” When I got to Brown, the program was small and fairly new, and we built it up to be a much bigger program that continues to grow. We now have about 40 students in the program and get more than 200 applications each year. I have worked with quite a few of the students as their master's adviser and employed many in our center. One of them is now actually working at Tufts with the nephrology group I used to work with.

### **What is your mission as the new chair of the department of biostatistics?**

As the new chair of biostatistics, I am taking over from two accomplished predecessors, Constantine Gatsonis and Joe Hogan. I would like to maintain the progress we've made as a new department and strive to be one of the top biostatistics departments. I'd like to continue to attract top students and faculty, give students more internship opportunities and other practical experiences, and increase our collaborations with other

departments in public health and medicine at Brown. And I'd like to focus our curriculum on those areas that students need to be scientific leaders in this age of data science and big data. For our students to be leaders, they need to be able to not just compute and analyze and prove things, but they need to be able to have a vision of where their company or university needs to go and how to get there and be able to communicate that vision to their nonstatistical colleagues.

*Service to the American Statistical Association, Especially the Health Policy Statistics Section (HPSS)*

#### **How did you get involved with HPSS?**

I attended an HPSS mixer at the Joint Statistical Meetings (JSM) many years ago and, while talking with some of the members, was recruited to run for HPSS program chair for the next JSM conference. I served two years as program chair-elect and then chair. I then agreed to become the co-chair of the International Conference on Health Policy Statistics (ICHPS) in 2008 with you, Joe. We ran a successful conference in Philadelphia and attracted quite a bit of outside funding for it. After that, I became the HPSS representative to the ASA Council of Sections and, following that, I became chair of the section.

#### **How would you describe your experience as an HPSS section member and officer, HPSS conference co-chair, and HPSS-sponsored invited speaker and short course instructor?**

I have found the section to be a wonderful place to meet both junior and senior colleagues. It has provided me with a great network of friends and professional opportunities. The section also sponsored a JSM workshop in meta-analysis that I gave with

Ingram Olkin for many years. I always look forward to the HPSS section mixer and attending and participating in sections sponsored by HPSS. ICHPS is one my favorite conferences because it is relatively small and focused on the kind of research I do.

#### **How did HPSS contribute to your being elected fellow of the ASA?**

My activities in HPSS were instrumental in getting me elected as an ASA Fellow not only because of the recognition it provided me, but also the work I was able to do professionally through my contacts there.

#### **What colleagues were most influential to your career?**

The most influential colleague I've had in my career has been Joseph Lau. I met Joseph in 1992 when he came to Tufts, and he was the one who got me into meta-analysis—which is where I've done most of my research and achieved most of my reputation. Through him, I was able to get involved in several organizations, including a working group in ecology and SRSM, and in evidence-based medicine and research that help guide health policy and medical recommendations.

#### **What advice would you give to students and junior researchers, especially as it relates to a career in health policy?**

Health policy sits at the intersection of so many fields. If you want to be successful in health policy research, you must know something about each of those fields. You need a wide skill set that includes statistics, computing, writing, health care knowledge, and the ability to work with people. Given the crucial position of health care in our economy and society, health policy is also one of the most rewarding statistical areas you can work in, with so many opportunities to make an impact. ■

## CHANCE HIGHLIGHTS

# Latest Issue of *CHANCE* Devoted to Sports

Children across the globe are fascinated with sports statistics. For many, this fascination never goes away! That's why we devoted an entire issue of *CHANCE* to sports.

Interest in sports statistics has grown rapidly over the past decade. We have the data! My friend and colleague Mark Glickman and I founded the New England Symposium on Statistics in Sports (NESSIS) at Harvard University. In its first offering in 2007, we had 110 registrants. Since then, we have held NESSIS biannually with growth to 125, 150, 180, 240, and 245 registrants in 2009, 2011, 2013, 2015, and 2017, respectively. (Please consider joining us for NESSIS VII in September 2019.)

This is an exciting time for statistics in sports. New technologies have been created and an explosion of data is available for analysis. The *Moneyball* culture has spread to many other sports beyond baseball. It is difficult to identify professional teams that do not have a developing group of statistical analysts to evaluate players and game strategies.

In this special issue of *CHANCE*, we have eight interesting articles with statistics applications to baseball, football, golf, horse racing, marathon running, and soccer. ■



**MORE ONLINE**  
Read more of the new issue of *CHANCE* magazine at <https://chance.amstat.org>.

## PASTIMES OF STATISTICIANS

# What Does Gerry Hahn Like to Do When He Is Not Being a Statistician?

*He sought out a hobby that would benefit society*

## Who are you, and what is your statistics position?



Gerry Hahn

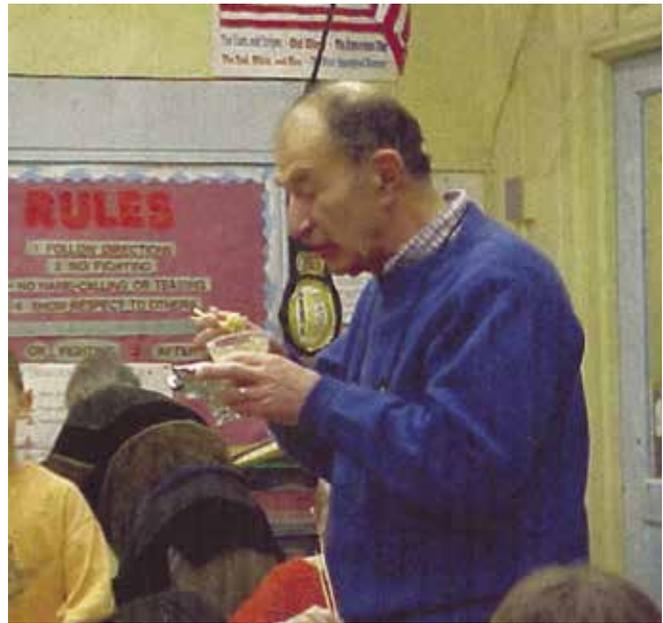
I, Gerry Hahn, retired from what is now the GE Global Research Center in 2001, after 46 years as an applied statistician—the last 26 as manager of the Applied Statistics Program, an organization that provided support to the entire GE Company. In my early days, I worked as a statistician for an advertising agency and then for the US Army Chemical Corps—rising to the lofty rank of corporal. Today, I still dabble in statistics for a couple of hours most days, mainly writing articles and books.

With co-authors Bill Meeker and Luis Escobar, I recently completed the second edition of *Statistical Intervals: A Guide for Practitioners and Researchers*. Also, for the past 20 years, I have collaborated with Necip Doganaksoy and Bill Meeker on a yearly article, mostly on reliability applications, for Quality Progress's Statistics Spotlight series. I am currently working with Necip and Bill on an introductory book, tentatively titled *Achieving Product Reliability: A Key in Business Success*.

In the most unlikely circumstance that any readers would like to know more, I refer them to a *Quality Engineering* article by Necip Doganaksoy, "A Conversation with Gerry Hahn," published in 2009.

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

I mentor third-graders in math at a local inner-city public school. (I originally did fourth-graders, but



Gerry Hahn visits a local inner-city public school, where he mentors and tutors third-graders.

was demoted a few years ago). I typically work, under the direction of the classroom teacher, with two youngsters at a time, but meet singly with some of the more challenging kids. This way, and by coming to school for a few hours once a week, I typically cover the entire class every two weeks.

Teachers do a great job instructing large classes of kids with a great diversity of abilities, motivation, and home encouragement.

Understandably, the major emphasis tends to be on the youngsters who need help most—to the detriment, at times, of the higher achievers, who are liable to get bored and possibly even turned off from learning. Thus, one of the key benefits of individualized mentoring is it can be targeted at an appropriate level for each child. Thus, I might review the basics of subtraction with one group and two-step "word problems" with the next.



Gerry Hahn in 2010 with other mentors

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

When I retired from GE in 2001, I found myself in an unusual situation. After an active professional career while, with Bea, raising three daughters, I now had some spare time. I regard time as my most valuable possession and want to spend it as wisely as possible. But what to select from among the immense array of opportunities this world provides us? Regrettably, I do not have the talent of my former colleagues Fred Faltin (researching, finding, and photographing ghost towns; see May 2017 *Amstat News*) and Wayne Nelson (doing the Argentine tango; see May 2018 *Amstat News*).

My criteria for selecting a hobby are that it be doable, fun, challenging, and—at least in some small way—beneficial to society. At first, I thought of learning to play the piano. But I soon realized that—although this hobby would surely be challenging—it was, given my lack of talent, not very doable, likely to be frustrating, and certainly not beneficial to society. Most fortunately, I was invited to participate in the local school mentoring program being spearheaded by my synagogue's Social Action Committee around that time. This appeared to meet my criteria—as it, indeed, did—and I agreed eagerly.

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Mentoring youngsters also presents a significant intellectual challenge—especially for those of you, like me, without a formal teaching background—to find ways of maintaining interest while still providing a valuable learning experience.

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The benefits of mentoring youngsters in our schools, moreover, is not all academic. It provides kids the personalized attention on which they thrive, especially the many who come from one-parent homes.

Mentoring youngsters also presents a significant intellectual challenge—especially for those of you, like me, without a formal teaching background—to find ways of maintaining interest while still providing a valuable learning experience. It also can give much personal satisfaction—like the thrill of walking into a classroom to see a bunch of eager kids vying to work with you. Or watching youngsters grow and develop.

Do you, dear reader, get the feeling I am trying to sell you on taking a shot at mentoring in your community? You bet I am! You can provide our dedicated and hard-working teachers a helping hand, enrich some future citizens' knowledge base and self-esteem, and have a great time doing it all. As long as you love children and like to contribute to their advancement, have an hour to spare during school, and have a reasonable amount of patience, you too can contribute. And, most likely, all you need to get started is a phone call to a local school. It's a win-win proposition. So, give it a try! After all, the world already has an ample supply of proficient pianists. ■



STATS4GOOD

# Data for Good Researchers Respond to Hurricanes

*Hackathons give the analytic community an opportunity to offer aid after disasters*

Following Hurricane Harvey, the Houston data analytic community's annual hackathon worked to aid rescue and relief efforts in Texas.

When disaster strikes, great minds turn to more and more ... hackathons! Data for Good researchers perform vital roles in mining social media, mapping, geo-spatial analysis, resource optimization, and other analytic functions, partnering with organizations that put boots on the ground to provide critically important information, logistical support, and guidance for hands-on relief efforts. Crowdsourcing can play an important role in bringing together many resources in a short time

in response to a crisis. As a result, many organizations now sponsor hackathons and data dives and create applications to collect crowdsourced information from people in affected areas.

One of several recent events was a hackathon at RPI in September. With many more than 100 people participating, the Call for Code Hackathon: Natural Disaster Preparedness and Relief Code Challenge was organized as a competition, with a cash award for the winner and an opportunity to work with IBM to implement



their project. In addition to an opportunity to work on this important project to help people in need, students and the sponsoring company also benefitted from the opportunity to meet and get to know each other.

Many government organizations are involved in crowdsourcing events. One example is the Houston Hackathon, an annual event focusing on local challenges and issues. Now in its sixth year, the event on May 18 hosted by Sketch City brought together more than 400 people for 24

hours of Data for Good. This event has served as a catalyst for the Houston analytic community to focus efforts in time of need. Following Hurricane Harvey, which struck Texas last August, Houston Mayor Sylvester Turner described efforts: “While it was still raining, Sketch City and others in the civic technology community were creating solutions to aid our rescue and relief efforts. ... These products saved lives, put resources in the hands of those in need, and are now being used to assist other communities after disasters.”

One government agency playing an important role in organizing crowdsourcing efforts is the Federal Emergency Management Agency (FEMA). We usually think of FEMA as the government resource for direct, onsite support for disaster response. In addition to all the efforts on the ground, a huge logistical effort is needed behind the scenes—and that means data and analysis.

### FEMA’s Disaster Crowdsourcing Exchange

Late last year, FEMA organized a Data for Good disaster response event at their Washington offices and online. As one of the online participants, I was able to see first-hand how statistical volunteers worked together to crowdsource data vital to the recovery efforts. Scores of participants were guided by a core group of professionals to “ground truth” images: assigning the correct identity objects appearing in the digital image. Efforts focused on buildings, roads, and other landscape features. Many of these were severely damaged by the hurricanes, making old maps obsolete. Even areas with less damage have required new development due to incomplete features in earlier maps.

As an online participant for this combined virtual and in-person event, I found the infrastructure generally worked well. There were occasional connectivity issues and sometimes speakers at the in-person meeting forgot the online people. After registration and a general introduction to the project, the crowdsourcing event began with training on the mapping software used to capture the data. It took about an hour to get familiar with the tool and begin to capture useful data.

While many people worked on the mapping effort, other opportunities to contribute included designing new projects, testing software, and



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.



Crowd-sourcing ground-truth data can show where roads are damaged, such as this road near Galveston, Texas, after Hurricane Harvey, or where homes and businesses have been destroyed.

developing the strategy for crowdsourcing projects in the future. Volunteers selected a number of opportunities to help, dividing them into project teams. Team leaders met with their volunteers to give specific guidance for individual tasks. After this briefing, the volunteers began working with the data.

Here is how their process for crowdsourcing ground-truth data works. First, images are taken of affected areas. Individual images are pieced together in a mosaic to produce a complete picture. This digital image is then converted into an editable map, which can be annotated with descriptions of objects appearing in the image. The entire map is broken into sectors, and a high-level map is created with thumbnails of the map sectors. Volunteers, who had been trained on the software, clicked on the thumbnail of a map sector to bring up a view of the editable map. The volunteers moused across a feature visible on the map to add a polygon corresponding to the object. The shape recorded in the map is annotated using drop-down menus to describe the designated object. The software has different drop-down lists for each type of object, with items on the list giving more detail about the object (e.g., a dirt road, minor paved road, or highway). Users

can save their data to the editable map and come back later to complete a sector.

The sectors I saw took perhaps a half hour to complete. This gives volunteers the flexibility to contribute larger or smaller blocks of time, as their schedule and commitments permit.

All this improves the ability to plan and execute disaster response. New data on roads enables disaster response to reach the most remote areas. Ground-truthing buildings enables responders to see where homes and business have been damaged or destroyed and identify what resources appear to have survived the disaster.

While this event responded to a disaster, crowdsourcing data collection to support Data for Good projects is found in many areas, including public health, crime, and homelessness. New crowdsourcing data-sharing applications like GatherIQ from SAS enable a widening community of volunteers to share data supporting analytics for good causes. Google your area of interest and there's a fair chance someone is crowdsourcing data today. If not, start your own!

Do you know of a Data for Good crowdsourcing data project? Let me know! I would love to hear more about it. Maybe your project can be featured here in Stats4Good! ■

**MORE ONLINE**  
To learn more about  
FEMA's Disaster  
Crowdsourcing  
Exchange, visit  
<https://bit.ly/2C5jNsE>.

STATtr@k

# ASA/NCHS Fellow Bridges Gap, Reaps Rewards

To help bridge the gap between academic and government research programs, the ASA offers fellowship opportunities with various federal agencies to foster collaborative and interdisciplinary research efforts. Since July, I have taken a break from my job as an assistant professor of biostatistics at Drexel University to become a research fellow at the National Center for Health Statistics (NCHS).

While my primary area of expertise is spatial statistics, I am applying spatial data analysis methods to problems in statistical disclosure limitation. For instance, you may be familiar with the suppression criterion used for vital statistics data on CDC WONDER (i.e., where all counts below 10 are suppressed to reduce disclosure risks). The impact of this criterion is exacerbated when conducting disparities research using CDC WONDER data, with counts stratified by race, sex, and other demographic information. My work aims to help data-users overcome research limitations from disclosure avoidance measures like data suppression by (1) creating software tools to help users better analyze highly suppressed data and (2) exploring techniques for generating spatially referenced synthetic data for public use that preserve the complex statistical properties of the data while reducing (or eliminating) the risk of disclosing any individual's sensitive information.

With my background in public health and previous postdoctoral fellowship at the Centers for Disease Control and Prevention, pursuing a fellowship at NCHS was natural for me. Importantly, my fellowship at NCHS allows me to work one-on-one with the experts who produce the restricted-use vital statistics data. I hope to gain a better understanding of the unique data confidentiality challenges faced by NCHS and develop statistically novel approaches that suit NCHS's needs. Along with my primary research

duties, I have had the opportunity to collaborate with researchers at NCHS, lending my expertise in spatial data analysis to study trends in teen birth rates and survey methodology.

Being in the Washington, DC, area has provided me with the added benefit of being able to engage with various other organizations—such as the Washington Statistical Society—and federal agencies nearby. For instance, I am serving on an organizing committee for an upcoming workshop hosted by the Federal Committee on Statistical Methodology's Geospatial Interest Group under the leadership of ASA President-elect Wendy Martinez from the Bureau of Labor Statistics. The networking opportunities this provides could become collaborations for me, or opportunities for my colleagues or students.

Think you may be interested in applying for an ASA fellowship? The first step is to visit <https://bit.ly/2OLHvks> to see a list of current fellowship opportunities and select the organization that best fits your interests. Each agency has its own application deadlines and requirements, often including a detailed description of your research proposal and a statement citing the significance of the research to the agency.

Also note that these fellowships can be quite flexible (i.e., the duration may range from a few months to a full year, with split-term and part-time appointments possible). Because I have teaching responsibilities at Drexel, I opted for a six-month fellowship with the possibility of an additional stint next year.

Although I'm only part-way through this experience, I think my time spent as an ASA/NCHS Fellow has done exactly what the goals of the fellowship intend: bridge the gap between academic and government researchers. I'm grateful to the ASA for giving me this opportunity, and I look forward to continued collaborations with my NCHS colleagues. ■



**Harrison Quick** is an assistant professor of biostatistics at Drexel University.

# CSP 2019 Promises Real-World Experience

Amy Farris, ASA Director of Membership Development and Marketing

**With its focus on the application of statistics to solve real-world problems, the Conference on Statistical Practice (CSP) brings together hundreds of statisticians, data analysts, researchers, and scientists each year.**



New Orleans, Louisiana  
February 14–16 **2019**

The conference—which will take place in New Orleans February 14–16, 2019—also provides opportunities for attendees to further their career development and strengthen relationships in the statistical community.

Four key themes relevant to those working daily in the application of statistics and data science are the focus of CSP:



**Communication,  
Collaboration, and  
Career Development**



**Data Modeling  
and Analysis**



**Data Science  
and Big Data**



**Software, Programming,  
and Data Visualization**

CSP 2019 will again host a virtual Career Service (<https://bit.ly/2yrx0bf>), providing a platform that connects attendees and statistical employers. This resource is available to all registered attendees at no charge. Attendees can post their profile and résumé, search positions, and contact employers of interest. Employers will then arrange interviews directly with candidates.

The close-knit atmosphere of CSP fosters a comfortable learning and networking environment. To learn more about the conference and register, visit [ww2.amstat.org/csp](http://ww2.amstat.org/csp). ■

Are you an employer interested in accessing the candidates and their résumés? Learn about recruiting at [ww2.amstat.org/meetings/csp/2019/recruit.cfm](http://ww2.amstat.org/meetings/csp/2019/recruit.cfm).



## CSP KEYNOTE ADDRESS

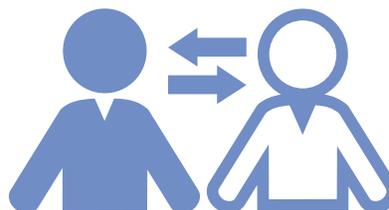
WHAT IS DATA SCIENCE?

**Hadley Wickham**

*RStudio*

## CSP MENTORING PROGRAM

Interested in mentoring or being mentored? The intimate setting of CSP is ideal for providing a mentor-matching system. After registering, you will receive information about how to participate in this unique program.





Meg Ruyle/ASA



At left, Christian Léger of the University of Montréal presents the oral part of his speed session. At right, he discusses his poster with Steve McEachern of The Ohio State University at JSM 2018 in Vancouver, Canada.

## JSM 2019 Invited Program Set; Other Avenues for Contributing Open

Rich Levine, JSM 2019 Program Chair

One of the largest gatherings of statisticians will be taking place in Denver next summer: the 2019 Joint Statistical Meetings. The meeting theme, “Statistics: Making an Impact,” aims to place our discipline at the crest of the data science wave hitting this information age. Our contributions and leadership are critical in, for example, developing machine learning methods, spearheading efforts in statistics literacy and communication, paving the way for data science education, and inspiring data-informed decision-making in scientific inquiries and public policy discussions.

The JSM 2019 Program Committee has finished constructing the invited program of more than 200 sessions for the meetings. You will be able to enjoy a diverse array of talks and panel sessions that include presentations on astronomical data, Census 2020, deep learning and artificial intelligence, microbiome data science, optimal design in big data problems, and precision medicine, to name a few. Several sessions also target critical philosophical and policy issues relevant to our profession.

The competition for an invited session was fierce this year. We saw a bumper crop of proposals, consisting of across-the-board high-quality, hot-topic

session ideas. In the end, fewer than half of the proposals were accepted, leaving many excellent sessions out of the invited program. The game is not over though, as there are many, I believe even better, opportunities to expose your work to the thousands of statisticians converging on Denver next August.

Now to my soap box: I am a huge proponent of poster presentations. A poster provides you the opportunity to interact one-on-one with your audience. This level of engagement stimulates research and concept discussions rarely afforded in traditional paper sessions. I thus strongly encourage you to consider a speed or poster session for dissemination of your work.

Below are the avenues for contributing to the JSM 2019 program.

### Speed Sessions

The speed session allows you to take advantage of electronic poster (eposter) capabilities at JSM. The “speed” part of the session consists of a four-minute oral presentation to advertise a later session poster presentation. These oral presentations are packaged in sets of 20, with a five-minute break after the first set of 10. The eposter session is 45 minutes long. We make every effort to group

the speed poster sessions by topic to attract the largest, most-focused audience possible.

A few words of wisdom learned from previous years' speed sessions:

- The oral presentation is your elevator speech meant to pique interest in and market your coming poster presentation. The less information and bigger the picture, the better.
- The eposter is an extremely flexible modality within which you may include software demos, analysis animations, videos, and interactive statistical graphics or dashboards. We encourage you to be creative, moving outside the box of a traditional poster board presentation. And you are freed of the hassle and cost associated with printing and transporting a poster!

### Poster Sessions

We will have traditional poster sessions: printed posters presented on large boards at the meeting site. The poster medium is the common presentation mechanism in many scientific fields. Poster sessions have the advantage of generating attention to your topic through effective visual display tools, encouraging extended and individualized topic discussions, networking with other professionals, and alleviating the distraction of time constraints.

Again, I strongly encourage you to consider a speed session or poster session format.

### Contributed Sessions

The traditional JSM session is a contributed session consisting of seven papers presented in 15-minute intervals. As I am sure you can probably corroborate, the short duration of the talks, relative difficulty interacting with the audience, and large number of parallel sessions make the contributed sessions a less-than-ideal mode of presentation. Seriously consider trying a speed or poster session this year. Let us change the JSM tradition by making the “vast majority” of sessions the more intimate poster presentation.

### Abstract Submission

To contribute to the JSM 2019 program in any of the above venues, submit an abstract and title online at [ww2.amstat.org/meetings/jsm/2019/submissions.cfm](http://ww2.amstat.org/meetings/jsm/2019/submissions.cfm) by February 4, 2019. (Note there is a different deadline for topic-contributed sessions; see below.) To ensure a well-organized program, speakers must

register for JSM when they submit their abstracts. As part of the submission process, you must also specify the choice of the ASA section or JSM partner society most closely associated with the topic of your presentation. The system will be reopened for abstract editing from April 1–18, 2019.

### Topic-Contributed Sessions

We are accepting proposals for the topic-contributed session competition. These sessions consist of five speakers organized around a common theme. Each speaker has 20 minutes of presentation time. The sessions are allocated on a competitive basis with each ASA section, committee, interest group, or partner society (ASA, CAS, ENAR, WNAR, IMS, SSC, ICOSA, IISA, KISS, ISBA, RSS, or ISI) having a limited number of slots. We encourage interested organizers to campaign for a sponsor—contact the appropriate Program Committee member by visiting <https://bit.ly/2RCouQ5>.

The selection process typically leads to cohesive sessions around high-quality papers. Organizers must select a theme, invite five speakers, and ensure speakers' commitments prior to the online submission (<https://bit.ly/2y7NKp2>) deadline of December 12. Decisions will be made and notifications sent in early January. Please make sure your session participants follow the strict rules (<https://bit.ly/2A2YAhG>) for JSM participation. Finally, we emphasize that only online session proposal submissions will be considered for the topic-contributed program.

### Call for Volunteers: Session Chairs

Every JSM session requires a chair. The duties include contacting speakers with session information pre-JSM and then introducing speakers and managing time during the session at JSM. The session chair position is a great opportunity for students and folks new to the profession to network and get a small taste of JSM coordination. And it provides an impressive-looking résumé line item! To volunteer, identify a section or society of interest and contact the Program Committee member by visiting <https://bit.ly/2RCouQ5>.

### #MakingAnImpact

The best way to make an impact on JSM 2019 is to contribute to the program! JSM's success depends on your participation. I am open to any feedback at [rlevine@sdsu.edu](mailto:rlevine@sdsu.edu). ■

## 2018 Causality in Statistics Education Prize Winners Announced

### *Open-access textbook earns education award*

The American Statistical Association awarded the sixth Causality in Statistics Education Prize (<https://bit.ly/2A2MmWc>) to Jonas Peters, Dominik Janzing, and Bernhard Schölkopf for their open-access textbook, *Elements of Causal Inference: Foundations and Learning Algorithms* (<https://bit.ly/2OOIQqI>), which provides an accessible coverage of the field, unique original content linking causal inference to machine learning and big data applications, and conceptual and computational exercises for students.

The winning materials and those of previous Causality in Statistics Education Award winners are available to download from <https://bit.ly/2Prz0bl>.

Established in 2013 by a donation by Judea Pearl, recipient of the 2012 Turing Award and professor of computer science and statistics at the University of California, Los Angeles, the annual award recognizes the work of an individual or team that enhances the teaching and learning of causal inference in introductory statistics coursework. Funded this year by Microsoft Research and Google, the \$5,000 award was presented at the 2018 Joint Statistical Meetings in Vancouver, Canada.

“While the study and practice of statistics is growing in popularity and demand in both academia and professional occupations, there remains a glaring gap when it comes to causal inference. Even with the recent development of causal inference tools, which are currently sweeping new insights and application areas, most statistics educators and textbooks do not provide any information on these tools,” said Pearl, who is co-chair of the prize selection committee. “In



**Jonas Peters**,  
University of  
Copenhagen



**Dominik Janzing**, Max  
Planck Institute  
for Intelligent  
Systems,  
Tübingen,  
Germany



**Bernhard Schölkopf**, Max  
Planck Institute  
for Intelligent  
Systems,  
Tübingen,  
Germany

#### **NOMINATIONS SOUGHT FOR 2019 PRIZE**

The ASA is accepting nominations for the 2019 Causality in Statistics Education Award until March 1, 2019. For details, see <https://bit.ly/2Prz0bl>.

#### **2018 Prize Committee Members**

Onyebuchi Arah, *University of California, Los Angeles*

Maya Petersen, *University of California, Berkeley*

Dennis Pearl, *Penn State University (co-chair)*

Judea Pearl, *University of California, Los Angeles (co-chair)*

Felix Elwert, *University of Wisconsin-Madison*

Ilya Shpitser, *The Johns Hopkins University*

giving this award, we not only recognize the dynamic efforts of renowned scholars, but also show other researchers and scientists that teaching causal inference can be fun and formative.”

Previous winners include Ilya Shpitser, Onyebuchi Arah, Arvid Sjölander, Tyler VanderWeele, Maya Petersen, Laura B. Balzer, and Felix Elwert. ■

## Six Statistical Organizations Issue Commendation for Andreas Georgiou

*Greek statistician recognized for commitment to statistics*

The ASA and five other statistical organizations joined to commend Andreas Georgiou for upholding the highest professional standards in his public service in the pursuit of integrity of statistical systems.

During his presidency at the Greek Statistical Authority, ELSTAT, Georgiou committed himself to ensuring the production of all official statistics in Greece be undertaken in strict conformity with international and European statistical principles and standards. In particular, he insisted all statistics, and the processes that underpinned their production and dissemination, should conform to the UN Fundamental Principles of Official Statistics and European Statistics Code of Practice.

In doing so, Georgiou faced extraordinary obstacles and has been subjected to innumerable challenges and court proceedings. This commendation acknowledges his competency and strength in the face of adversity; his commitment to the production of high-quality and trustworthy official statistics; and his advocacy for the improvement, integrity, and independence of official statistics.



John Bailer, right, president-elect of the International Statistical Institute, presents Andreas Georgiou with a commendation for upholding the highest professional standards in his public service.

International Statistical Institute President-elect John Bailer presented the commendation September 18 during a special meeting, titled “National Statistical Offices’ Professional Independence: Threats and Responses,” immediately prior to the XVI International Association of

**Editor’s Note:** The material here was sourced from an International Statistical Institute press release.

Official Statistics Conference in Paris.

Read the citation: <https://bit.ly/2A2XZur>. ■

# Larry Hedges Awarded 2018 Yidan Prize for Education Research

**N**orthwestern University professor Larry Hedges, a pre-eminent scholar and global heavyweight in education research, was awarded the 2018 Yidan Prize for Education Research, the world's largest prize in education research.

The prize, which comes with \$3.9 million in support, recognizes Hedges for his groundbreaking statistical methods for meta-analysis, which serve as a foundation for much of the rigorous, evidenced-based education policy across the globe.

Hedges is chair of the department of statistics at Northwestern and a professor of education and social policy, psychology, and medical social science. Among the most influential applied statisticians in the world, Hedges' work allows policymakers, educators, and the public to see the evidence for "what works" in the field of education and makes it possible to take a scientific approach to improving education for future generations.

As a first-generation college student, Hedges' accomplishments and contributions are particularly inspiring. "I was a kid from a poor family. We didn't know anybody who went to college," Hedges said. "The reason I am passionate about education is precisely that it was a life-changing thing for me in terms of mobility, and I would like everybody else to have that chance."

Hedges' father worked for minimum wage until he retired, and his mother was a dishwasher at the local college.

"As an 11-year-old boy wandering about the Fresno State College campus, where his mother worked as a dishwasher at the college's cafeteria, Larry literally saw an open door and stepped inside a chemistry lab," said Northwestern President Morton Schapiro, who nominated Hedges for the Yidan Prize. "He encountered a talkative graduate student testing food samples for pesticides and they had a conversation. For the first time, Larry could see the possibilities for a future unknown to his parents, neither of whom attended college."

Hedges would go on to earn a Regents Scholarship at the University of California, San Diego, where he studied mathematics and physics. He became deeply involved in peer tutoring and mentoring of minority students.

Hedges discovered his path and passion, making such an impact that the university invited him to continue his work after graduation. In the three years that followed, Hedges put together a summer bridge program for under-represented students and a mathematics clinic.

When Hedges entered graduate school in 1976, education research was in a state of disarray. While much research had been done, it lacked standards and rigor. He saw an opportunity to develop more rigorous methods for synthesizing research findings across studies through meta-analysis. This work would

occupy much of Hedges' early career and ultimately redefine the concept of evidence in education and psychology.

By 1980, when he left graduate school for his first academic job in the department of education at The University of Chicago, Hedges was traveling to apartheid South Africa, where he helped start supplementary academic preparation programs—illegal under South African law at the time—to help non-white students gain admission to white universities.

More recently, at Northwestern, Hedges turned his attention to the smallest scale of educational research studies, so called "single case" designs involving a single individual. Such studies are crucially important in areas such as the study of rare disabilities, where it is unrealistic to assemble a large sample.

"Larry's vision and commitment to education as a vehicle to promote opportunity have boosted the prospects for a generation of students, and his impact on the field of education research is absolutely immeasurable," Schapiro said. "In fact, his life's work is informed by his own experience of the power of education to change lives."

The Yidan Prize is named for its founder, Charles Chen Yidan, who established the prize in 2016 with a mission to make the world a better place through education.

"I congratulate the laureates and nominees alike for their outstanding contribution

and achievements,” Yidan said. “Education should be an area of interest that goes beyond race, religion, economic status, or country of origin. I hope every country and region can share the results of education research and development, facilitating more international cooperation in order to create a better world through education.”

Hedges shares the honor this year with professor Anant Agarwal, founder and CEO of edX, an online learning destination founded by Harvard and MIT that provides access to high-quality education at scale to learners around the world, regardless of geographic location, financial resources, prior academic qualifications, gender, or race. Agarwal is

the recipient of the Yidan Prize for Education Development.

This year’s laureates were selected from almost 1,000 nominees working in 92 countries by an independent committee over the course of a six-month selection process.

Hedges has authored or co-authored 10 books and numerous journal articles, including the seminal *Statistical Methods for Meta-Analysis* and *The Handbook of Research Synthesis and Meta-Analysis*.

He is an elected member of the National Academy of Education and a fellow of the American Academy of Arts and Sciences, American Statistical Association, American Psychological Association, and American

Educational Research Association. He is also a member of the Society for Research on Educational Effectiveness, which established an annual endowed lecture in his honor. He gave the inaugural Hedges Lecture in 2016.

Hedges was nominated by President Barack Obama to the Board of Directors of the National Board for Education Sciences, confirmed by the US Senate in June 2012, and elected chair of the board in 2016.

He was elected “Statistician of the Year” by the Chicago Chapter of the American Statistical Association for 2013–14. In 2018, he became the third American to be elected an honorary member of the European Association of Methodology. ■

## Nominations Sought for Zelen Leadership Award

Nominations for the Marvin Zelen Leadership Award in Statistical Science are being accepted until November 30, 2018. The annual award honors Marvin Zelen’s long and distinguished career as a statistician and his major role in shaping the field of biostatistics.

The award recognizes an individual in government, industry, or academia, who by virtue of his/her outstanding leadership, has shaped the theory and practice of statistical science. While individual accomplishments are considered, the most distinguishing criterion is the

awardee’s contribution to the creation of an environment in which statistical science and its applications have flourished.

The award recipient will deliver a public lecture on statistical science at the Harvard T. H. Chan School of Public Health in May 2019 and will be presented with a citation and honorarium.

Nominations should include a letter describing the contributions of the candidate, specifically highlighting the criteria for the award, and a curriculum vita. Other supporting materials would be helpful to the committee.



Marvin Zelen

Please send nominations to Shaina Andelman at [sandelma@hsph.harvard.edu](mailto:sandelma@hsph.harvard.edu).

For details, visit the Harvard T. H. Chan School of Public Health website at <https://bit.ly/2IZwKfj>.



Patrick Ball accepts the Peace Award from ASA President Lisa LaVange during this year's awards ceremony during the 2018 Joint Statistical Meetings in Vancouver, Canada.

## Karl E. Peace Award Recognizes Work of Patrick Ball

David Corliss, Ford Motor Company

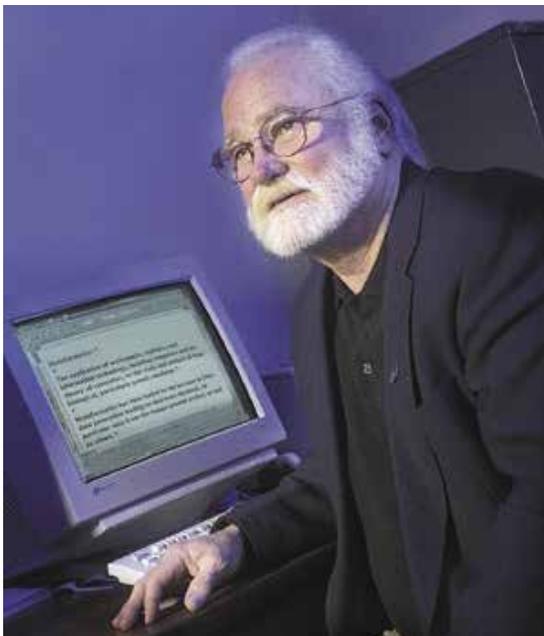
The American Statistical Association's 2018 Karl E. Peace Award for Outstanding Statistical Contributions for the Betterment of Society recognizes the work of leading human rights mathematician Patrick Ball of the Human Rights Data Analysis Group (HRDAG). The award is presented annually to statisticians whose exemplary statistical research is matched by the impact their work has had on the lives of people.

Established by the family of Karl E. Peace in honor of his work for the good of society, the award—announced at the Joint Statistical Meetings—is bestowed upon distinguished individual(s) who have made substantial contributions to the statistical profession, contributions that have led in direct ways to improving the human condition. Recipients will have demonstrated

through their accomplishments their commitment to service for the greater good.”

Ball is the co-founder and first executive director of the Human Rights Data Analysis Group (HRDAG—<https://hrdag.org>), an independent NGO (nongovernmental organization) investigating human rights violations around the world and providing partners with sound, data-driven evidence for seeking justice. Elected a fellow of the American Statistical Association in 2014, he now serves as HRDAG's director of research, focusing on analytic projects and methodologies.

Ball has dedicated his career to the rigorous statistical analysis of human rights violations, especially by state actors, including war crimes and genocide. His quantitative analysis has supported investigations by the UN and other NGOs, truth commissions, and human rights crime tribunals



Karl E. Peace

in more than 15 countries. His testimony as an expert witness played a central role in war crime trials before the International Criminal Tribunal for the former Yugoslavia, in which Serb leader Radovan Karadžić and General Ratko Mladić were found guilty of genocide, crimes against humanity, and other crimes. He also served as an expert witness at the Guatemalan trial of dictator General José Efraín Ríos Montt and others, contributing to the first conviction for genocide of a former head of state in his own country. HRDAG's important work on human rights abuses in Guatemala continues today.

Ball's contributions have been multifaceted, combining statistical methods; standards for developing and presenting scientific evidence of rights violations; project and organization management; and mentoring, education, and advocate development. One important scientific advancement has been the application of capture-recapture methodology to human rights. This method has been used by ecologists for more than a century to determine the size of animal populations.

The classic example of capture-recapture is counting the number of fish in a lake. First, fish are caught by some group or researchers by some method, who tag and release all the fish they catch. A subsequent round of fishing may vary by who is doing it or by the method used—this flexibility in methodology being important to human rights applications of capture-recapture. The second team counts both the number of fish caught and the number of tagged fish previously recorded by the first team and method. The number of fish

in the lake is equal to the number caught by the first team multiplied by the number from the second team divided by the number caught by both teams—that is, the count of *tagged* fish caught by the second team.

The application of capture-recapture methodology to human rights violations has been critical to obtaining scientifically accurate victim counts. Ball's work has been an important contributor in establishing capture-recapture as an investigation tool in a difficult situation often encountered by human rights statisticians: where multiple agencies and organizations provide independent but incomplete reporting of human rights violations and other crimes. Ball and current HRDAG Executive Directory Megan Price reviewed this work in the Winter 2018 issue of *CHANCE*, including a detailed description of the statistical methodology.

Use of capture-recapture is growing. At JSM, RTI's Duren Banks presented on using capture-recapture to obtain reliable counts of persons who have died in police custody. Following HRDAG's research, a new pilot project at Peace-Work is applying capture-recapture to count human trafficking victims in the United States.

Many of those nominating or commending Ball on this award mentioned the importance of his leadership above and beyond his statistical research and practice. Ball's work in collaboration, presenting, teaching, and mentoring extend his impact beyond the critical work of publishing papers and testifying in court. He maintains and trains the complete picture of a person making an impact on society through statistics. This has provided a path for others to follow in Data for Good (D4G), either as a person's primary focus or for a career in which it plays an important part-time role.

Data for Good is uplifting, but it can also be a long hard road on which one explores the greatest depths of human fears, loss, and cruelty. Ball, HRDAG, and all who labor in these areas show how the light of D4G shines brightest in the darkest places. For more than 20 years, Ball has been showing how to kindle that light and encourage all of us to carry it forward.

This year, Ball became the 10th recipient of the award. Visit <https://bit.ly/2IMInjl> to learn more about the Karl E. Peace Award and be inspired by the work of Patrick Ball and those who have been recognized in previous years. ■

**MORE ONLINE**  
Megan Price, HRDAG's executive director, was profiled in the September issue of *Amstat News*. Read about her at <https://bit.ly/2OeY9JH>.



North Carolina Chapter members mingle at the close of the Statistical and Applied Mathematical Sciences Institute's workshop in August.

## North Carolina Chapter Holds Joint Socials with SAMSI Workshops

The North Carolina Chapter coordinated two joint socials in conjunction with the Statistical and Applied Mathematical Sciences Institute's (SAMSI's) 2018 program opening workshops in August.

A social coinciding with the end of the first day of the opening workshop of the Program on Statistical, Mathematical, and Computational Methods for Precision Medicine (PMED) was held in Raleigh. The following week, a

social coinciding with the Model Uncertainty: Mathematical and Statistical (MUMS) program's opening workshop met on Duke's campus.

At the socials, visiting statisticians met with area statisticians—including ASA president Lisa LaVange—to enjoy food, drinks, and beautiful weather.

More information about SAMSI can be found at [www.samsi.info](http://www.samsi.info), while information about NC ASA events can be found at <https://bit.ly/2QJfnHQ>. ■

## sectionnews

### Biopharmaceutical

The Biopharmaceutical Section will offer a scholarship of \$1,000 to each of three students in 2019. This award is intended to recognize three main areas of student achievement related to biopharmaceutical statistics: notable research; specific technical achievement; and applied project work. The award, however, also takes into consideration general academic performance, leadership, volunteering, and service.

Eligible applicants must have a bachelor's degree and be enrolled in either a master's or doctoral program in statistics or biostatistics. Membership in the Biopharmaceutical Section is not required (though membership is free for students), but ASA membership is required for all applicants.

Students can download an application and find instructions for submitting it on the

Biopharmaceutical Section website at <https://bit.ly/2QFXTQB>. All applications must be submitted between January 1 and March 15, 2019.

Applicants will be notified by mid-April 2019 of the outcome of their application.

Winners will be announced in mid-April and included in the ASA awards program at the 2019 Joint Statistical Meetings in Denver, Colorado. ■



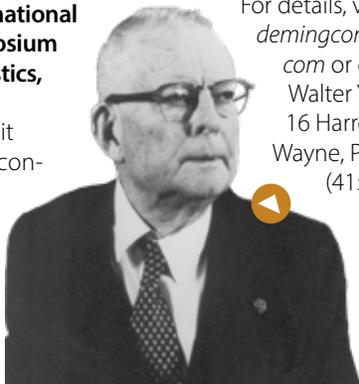
The Victoria Memorial in Kolkata, India, is the location of the Tenth International Triennial Calcutta Symposium on Probability and

## 2018

### November

#### 27–30—The Tenth International Triennial Calcutta Symposium on Probability and Statistics, Kolkata, India

For more information, visit <https://bit.ly/2O94tm3> or contact Arindam Sengupta, Kolkata, International 700035, India; [caltri10@gmail.com](mailto:caltri10@gmail.com).



### December

#### »\*3–7—74th Annual Deming Conference on Applied Statistics, Atlantic City, New Jersey

For details, visit [www.demingconference.com](http://www.demingconference.com) or contact Walter Young, 16 Harrow Circle, Wayne, PA 19087; (415) 819-8884; [demingchair@gmail.com](mailto:demingchair@gmail.com).

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](http://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



Cathedral-Basilica of Saint Louis, King of France, in New Orleans, Louisiana



»21–23—**MSAST 2018, Kolkata, India**

For more information, visit [imbicorg.blogspot.com](http://imbicorg.blogspot.com) or contact Avishek Adhikari, AH 317, Sector II, Kolkata, International 700091, India; +(91)9830794717; [msast.paper@gmail.com](mailto:msast.paper@gmail.com).

»27–30—**The Tenth International Triennial Calcutta Symposium on Probability and Statistics, Kolkata, India**

For more information, visit <https://bit.ly/2O94tm3> or contact Arindam Sengupta, Kolkata, International 700035, India; [caltri10@gmail.com](mailto:caltri10@gmail.com).

## 2019 January

»3–5—**International Conference on Computer Age Statistics in the Era of Big and High Dimensional Data, Pune, India**

For details, visit [www.iccas19pune.org](http://www.iccas19pune.org) or contact Akanksha Kashikar, Department of Statistics, Pune, International 411045, India; 912025698752; [iccas19pune@gmail.com](mailto:iccas19pune@gmail.com).

## February

»\*14–16—**2019 American Statistical Association Conference on Statistical Practice, New Orleans, Louisiana**

For details, visit [ww2.amstat.org/csp](http://ww2.amstat.org/csp) or contact ASA Meetings, 732 North Washington St., Alexandria, VA 22314; (703) 684-1221; [meetings@amstat.org](mailto:meetings@amstat.org).



## March

### 18–22—German Joint Statistical Meeting DAGStat2019, Munich, Germany

For more information, visit [www.dagstat2019.de](http://www.dagstat2019.de) or contact Michael Lebacher, Ludwigstr. 33, Munich, International 80539, Germany; +49 89 2180 2226; [michael.lebacher@stat.uni-muenchen.de](mailto:michael.lebacher@stat.uni-muenchen.de).



## May

### »2–4—SIAM International Conference on Data Mining (SDM19), Calgary, Alberta, Canada

For more information, visit <https://bit.ly/2Nmr49p> or contact Eva Donnelly, 3600 Market St., 6th Floor, Philadelphia, PA 19104; (215) 382-9800; [meetings@siam.org](mailto:meetings@siam.org).

### »10–12—The 7th Workshop on Biostatistics and Bioinformatics, Atlanta, Georgia

For details, contact Yichuan Zhao, 1342, 25 Park Place, Atlanta, GA 30303; (404) 413-6446; [yichuan@gsu.edu](mailto:yichuan@gsu.edu).



Bellevue, Washington 

### »\*29–6/1—2019 Symposium on Data Science & Statistics, Bellevue, Washington

For more information, visit [ww2.amstat.org/meetings/sdss/2019](http://ww2.amstat.org/meetings/sdss/2019) or contact ASA Meetings, 732 N.



The 2019 International Conference on Data Mining will be in Calgary, Alberta, Canada.

Washington St., Alexandria, VA 22314; (703) 684-1221; [meetings@amstat.org](mailto:meetings@amstat.org).

## June

### 18–21—The 7th International Workshop in Sequential Methodologies, Binghamton, New York

For details, visit [sites.google.com/view/iwsm2019](http://sites.google.com/view/iwsm2019) or contact Aleksey Polunchenko, 4400 Vestal Parkway East, Binghamton, NY 13902; (607) 777-6906; [iwsm2019@gmail.com](mailto:iwsm2019@gmail.com).

## July

### »8–12—International Workshop on Statistical Modelling 2019 (IWSM2019), Guimarães, Portugal

For details, visit [www.iwsm2019.org](http://www.iwsm2019.org) or contact Luís Machado, Department of Mathematics and Applications, University of Minho, Guimarães, International 4800-058, Portugal; 351253510443; [lmachado@math.uminho.pt](mailto:lmachado@math.uminho.pt).



JSM 2019 will take place in Denver, Colorado.

**\*27–8/1—2019 Joint Statistical Meetings, Denver, Colorado**

For details, visit [www2.amstat.org/meetings/jsm/2019](http://www2.amstat.org/meetings/jsm/2019) or contact ASA Meetings, 732 North Washington St., Alexandria, VA 22314; (703) 684-1221; [meetings@amstat.org](mailto:meetings@amstat.org).

**August**

**»17–19—The Fourth Workshop on Higher-Order Asymptotics and Post-Selection Inference (WHOA-PSI), St. Louis, Missouri**

For more information, visit <https://bit.ly/2NmpDYz> or contact Todd Kuffner, 1 Brookings Drive, St. Louis, MO 63130; [kuffner@wustl.edu](mailto:kuffner@wustl.edu).

**September**

**»\*23–25—2019 ASA Biopharmaceutical Section Regulatory-Industry Statistics Workshop, Washington, DC**

For more information, contact ASA Meetings, 732 North Washington St., Alexandria, VA 22314; (703) 684-1221; [meetings@amstat.org](mailto:meetings@amstat.org).

**October**

**»10–12—The 3rd International Conference on Statistical Distributions and Applications (ICOSDA 2019), Grand Rapids, Michigan**

For more information, visit <https://bit.ly/2OBuBFv> or contact Felix Famoye,

Department of Mathematics, Mt. Pleasant, MI 48859; (989) 774-5497; [felix.famoye@cmich.edu](mailto:felix.famoye@cmich.edu).

**2020  
January**



**\*6–8—2020 International Conference on Health Policy Statistics (ICHPS), San Diego, California**

For more information, contact ASA Meetings, 732 North Washington St., Alexandria, VA 22314; (703) 684-1221; [meetings@amstat.org](mailto:meetings@amstat.org). ■



# SIAM/ASA Journal on UNCERTAINTY QUANTIFICATION

## Recently published articles:

### **Uncertainty Quantification for Low-Frequency, Time-Harmonic Maxwell Equations with Stochastic Conductivity Models**

Dimitris Kamilis and Nick Polydorides

### **Warped Gaussian Processes and Derivative-Based Sequential Designs for Functions with Heterogeneous Variations**

Sébastien Marmin, David Ginsbourger, Jean Baccou, and Jacques Liandrat

### **Existence, Uniqueness, and a Comparison of Nonintrusive Methods for the Stochastic Nonlinear Poisson–Boltzmann Equation**

Clemens Heitzinger, Michael Leumüller, Gudmund Pammer, and Stefan Rigger

### **Optimal Adaptation for Early Stopping in Statistical Inverse Problems**

Gilles Blanchard, Marc Hoffmann, and Markus Reiß

### **Low-Rank Independence Samplers in Hierarchical Bayesian Inverse Problems**

D. Andrew Brown, Arvind Saibaba, and Sarah Vallélian

### **Greedy Algorithms for Optimal Measurements Selection in State Estimation Using Reduced Models**

Peter Binev, Albert Cohen, Olga Mula, and James Nichols

### **Efficient Distribution Estimation and Uncertainty Quantification for Elliptic Problems on Domains with Stochastic Boundaries**

Jehanzeb H. Chaudhry, Nathaniel Burch, and Donald Estep

### **Coupling Computer Models through Linking Their Statistical Emulators**

Ksenia N. Kyzurova, James O. Berger, and Robert L. Wolpert

### **Tensor Algorithms for Advanced Sensitivity Metrics**

Rafael Ballester-Ripoll, Enrique G. Paredes, and Renato Pajarola

### **Rigorous Analysis for Efficient Statistically Accurate Algorithms for Solving Fokker–Planck Equations in Large Dimensions**

Nan Chen, Andrew J. Majda, and Xin T. Tong

### **Finite-Dimensional Gaussian Approximation with Linear Inequality Constraints**

Andrés F. López-Lopera, François Bachoc, Nicolas Durrande, and Olivier Roustant

### **Multilevel Monte Carlo Approximation of Functions**

S. Krumscheid and F. Nobile

SIAM/ASA Journal on Uncertainty Quantification (JUQ) publishes research articles presenting significant mathematical, statistical, algorithmic, and application advances in uncertainty quantification, defined as the interface of complex modeling of processes and data, especially characterizations of the uncertainties inherent in the use of such models. The journal also focuses on related fields such as sensitivity analysis, model validation, model calibration, data assimilation, and code verification. The journal also solicits papers describing new ideas that could lead to significant progress in methodology for uncertainty quantification as well as review articles on particular aspects. The journal is dedicated to nurturing synergistic interactions between the mathematical, statistical, computational, and applications communities involved in uncertainty quantification and related areas.

**Browse articles at**  
**[epubs.siam.org/juq](http://epubs.siam.org/juq)**

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

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

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

Rates and additional information on 65 word ads can be found [ww2.amstat.org/ads](http://ww2.amstat.org/ads)

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 <https://jobs.amstat.org/jobseekers>.

### California

■ The Stanford Statistics Department invites applications for a tenured position at the associate or full professor level. Candidates must hold a PhD in Statistics or a related area, and be internationally recognized for distinguished contributions in their field. The successful candidate will be expected to maintain a robust research program, teach, and mentor junior researchers and students effectively. Full description and application at: <https://bit.ly/2QpkMYo>. Stanford is an equal employment opportunity and affirmative action employer. All qualified applicants will receive consideration for employment without regard to race, color, religion, sex, sexual orientation, gender identity, national origin, disability, protected veteran status, or any other characteristic protected by law. Stanford also welcomes applications from others who would bring additional dimensions to the university's research, teaching and clinical missions.

■ Dot818, a leading performance marketing agency, has an immediate need for a senior data analyst to monitor and support its data processes through the development of new reports, frameworks, dashboards, and other tools for the company. The position

is full-time and includes competitive benefits. Use the following link to review the complete job listing and submit your resume: <https://bit.ly/2OXWmZ2> EOE.

■ The Statistics Department at Stanford University invites applications for a tenure-track assistant professor position in applied statistics, theoretical statistics, or probability. This is a research and teaching position with student advising and department committee responsibilities. Applicants should have demonstrated strong research abilities. A PhD in Statistics or a related area is required. Full description and application at: <https://bit.ly/2NYghY2>. Stanford is an equal employment opportunity and affirmative action employer. All qualified applicants will receive consideration for employment without regard to race, color, religion, sex, sexual orientation, gender identity, national origin, disability, protected veteran status, or any other characteristic protected by law. Stanford also welcomes applications from others who would bring additional dimensions to the university's research, teaching and clinical missions.

### District of Columbia

■ Assistant or associate research professor of epidemiology and biostatistics.

Basic duties: Serve as co-investigator on existing multi-center study. Will contribute to the design, analysis and publication of major papers in leading medical journals. Applicants must have doctorate in statistics, biostatistics or epidemiology w/strong credentials in statistical methodology. Review of applications begins on 9/22/2018 and is ongoing until the position is filled. Apply online at: <https://bit.ly/2zP6aMI>. George Washington University is an EOE/AA.

■ Tenured/tenure-track open-rank professor of epidemiology and biostatistics. Basic duties: Establish an externally funded, internationally recognized, and interdisciplinary research portfolio in clinical trials, epidemiological, diagnostic studies, controlled trials in educational research, or may extend to other areas of research such as forensic statistics. Review of applications begins on 10/8/2018 and is ongoing until the position is filled. Apply online at: <https://bit.ly/2R1CVHX>. EOE/AA.

### Florida

■ The department of statistics at Florida State University invites applications for two assistant professor positions starting August 2019. A PhD in statistics, biostatistics, or a related field is required. Please apply at <https://fla.st/2zP6I58> (Job ID 44142 and Job ID 44143). Priority will be given to completed applications received by December 1st. Review of applications begins in November and continue until the position is filled. EOE.

### Idaho

■ Idaho State University Department of Community and Public Health invites applications for a full-time (9-month), non-tenure track clinical assistant professor of public health starting August 2018. Applicants must have a PhD or DrPH in biostatistics



The **Statistical and Applied Mathematical Sciences Institute (Samsi)** is soliciting applications from statistical, mathematical and computational scientists for up to 6 postdoctoral positions for the Samsi research programs in 2019-2020. The three programs are: (1) **Games, Decisions, Risk and Reliability**, (2) **Deep Learning**, and (3) **Causal Inference**. Appointments will begin in **August, 2019** and typically run for two years, although they can also be arranged for a single year. Appointments are made jointly between Samsi and one of its partner universities (*Duke University, North Carolina State University, and the University of North Carolina Chapel Hill*). Teaching opportunities may be available. The positions offer extremely competitive salaries, a travel stipend, and health insurance benefits.

Criteria for selection of Samsi Postdoctoral Fellows include demonstrated research ability in statistics, applied mathematics, and/or computational science, excellent computing skills, and the ability to communicate both orally and in writing. Also, the preferred applicant will have a strong interest in one or more of the research programs scheduled for 2019-2020. The deadline for full consideration is **December 15, 2018**, although later applications will be considered as resources permit.

Please specify which Samsi programs you are applying for in your cover letter and why you believe you would be a good fit for those programs.

To apply, go to **mathjobs.org**:

**SAMSIPD2019 Job #12160**

To see more about these programs, visit:

**[www.samsi.info/games-19-20](http://www.samsi.info/games-19-20)**

**[www.samsi.info/sem-deep-Ing](http://www.samsi.info/sem-deep-Ing)**

**[www.samsi.info/sem-cas-inf](http://www.samsi.info/sem-cas-inf)**

**\*\*Samsi is an Equal Opportunity employer\*\***

or statistics, experience consulting in interdisciplinary teams, advanced statistical skills, and strong communication skills with the ability to express complex analytic information to faculty with diverse backgrounds. Apply at <https://bit.ly/2P93XAP> EOE.

### Maryland

■ The Division of Intramural Population Health Research of the Eunice Kennedy Shriver National Institute of Child Health and Human Development is seeking a dynamic leader and internationally recognized methodologist to serve as chief of the biostatistics and bioinformatics branch (for details see <https://bit.ly/2QuzH3P>). For information about the position contact Dr. Stephen Gilman, senior investigator and chief,

Social and Behavioral Sciences Branch ([stephen.gilman@nih.gov](mailto:stephen.gilman@nih.gov)). HHS, NIH, and NICHD are equal opportunity employers.

### Massachusetts

■ The Department of Biostatistics and Computational Biology (BCB) at Dana-Farber Cancer Institute seeks an experienced and highly motivated PhD biostatistician to engage collaboratively w/investigators on basic science, animal model, and human research activities in multiple areas of adult oncology and HIV disease. PhD and at least 2 years of collaborative experience are required. Prior experience in oncology and/or HIV is a plus. Application link: <https://bit.ly/2RmUEPh> Dana-Farber Cancer Institute is an EOE.

## THE GEORGE WASHINGTON UNIVERSITY

### WASHINGTON, DC

The Department of Statistics at the George Washington University Foggy Bottom Campus invites applications for two tenure-track assistant professor positions to begin as early as Fall 2019, pending final budgetary approval. All areas of statistics will be considered

Basic Qualifications: Applicants must possess a Ph.D. or Doctorate in statistics, biostatistics or a closely related field. ABD candidates will be considered but must complete all Ph.D. or Doctoral degree requirements by the

date of appointment. The positions seek candidates with strong training in probability and statistics, and demonstrated interest in developing statistical methods for applications. Applicants must have demonstrated teaching excellence indicated by research presentations and teaching assessments, and commitment to research as evidenced by publication in scholarly journals and works in progress.

To apply, visit <http://www.gwu.jobs/postings/55969>. Review of applications will begin on January 2, 2019 and will continue until the positions are filled. Only complete applications will be considered. Employment offers are contingent on the satisfactory outcome of a standard background screening.

The George Washington University is an Equal Employment Opportunity/Affirmative Action employer that does not unlawfully discriminate in any of its programs or activities on the basis of race, color, religion, sex, national origin, age, disability, veteran status, sexual orientation, gender identity or expression, or on any other basis prohibited by applicable law. The university and department have a strong commitment to achieving diversity among faculty and staff. We strongly encourage women, persons of color and members of underrepresented groups and to apply for these positions.



## Tenure Track Faculty STATISTICS

### Virginia Tech Department of Statistics

The Virginia Tech Department of Statistics ([www.stat.vt.edu](http://www.stat.vt.edu)) invites applications for a tenure-track faculty position in the Department of Statistics to begin in August 2019. Appointment at the rank of Assistant Professor is preferred, but the Associate level will be considered for exceptional candidates. Requirements include a Ph.D. in statistics or a closely related field and a research focus in computationally-intensive statistical methods.

This is a unique opportunity to become a member of a vibrant, growing Department of Statistics in the midst of a major expansion of our faculty and a significant modernization of our curricula and programs. The position is also part of a major emphasis on statistics, including computational modeling, data science and analytics, and empirical decision making at Virginia Tech.

Questions regarding the position can be directed to Professor Robert B. Gramacy ([rbg@vt.edu](mailto:rbg@vt.edu)), chair of the search committee. Review of applications will begin on December 1, 2018. Applications must be submitted online at [#TR0180115](http://listings.jobs.vt.edu).

*Virginia Tech is an EO/AA university, and offers a wide range of networking and development opportunities to women and minorities in science and engineering, and additionally provides a competitive dual hiring program for couples.*

■ Boston University department of mathematics and statistics invites applications for a tenure-track assistant professor in statistics starting July 2019 pending budgetary approval. Applicants must have a PhD with a commitment to research and to teaching at the undergraduate and graduate levels. Apply on-line to [mathjobs.org](http://mathjobs.org) by December 15, 2018. [mathjobs.org](http://mathjobs.org) We are an equal opportunity employer and all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, sexual orientation, gender identity, national origin, disability status, protected veteran status, or any other characteristic protected by law. We are a VEVRAA federal contractor.

■ Boston University department of mathematics and statistics invites applications for a three-year post-doctoral position in Statistics, starting July 2019. Strong commitment to research and teaching is essential. Please submit application and all materials to [mathjobs.org](http://mathjobs.org) by December 15, 2018. We are an equal opportunity employer and all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, sexual orientation, gender identity, national origin, disability status, protected veteran status, or any other characteristic protected by law. We are a VEVRAA federal contractor.

■ Amherst College invites applications for a lecturer in statistics with the appointment to begin on July 1, 2019. This full-time position has an initial three-year term and includes teaching five courses per year, and some other responsibilities. See the full ad and submit applications at [MathJobs.Org](http://MathJobs.Org). All applications received by December 17, 2018, will be guaranteed consideration. Questions can be addressed to [mathstats@amherst.edu](mailto:mathstats@amherst.edu). Amherst College is an equal opportunity employer and encourages persons of all genders, persons of color, and persons with disabilities to apply. The college is committed to enriching its educational experience and

its culture through the diversity of its faculty, administration, and staff.

### Michigan

■ The Survey Research Center (<https://bit.ly/2ensc0u>) in the Institute for Social Research at the University of Michigan invites applications from outstanding candidates for research professor with doctorate in social science area. For details about this position, see: <https://bit.ly/2O3rJBR>. Applicants should submit a cover letter, CV, names of references, and one or two publications. Documents should be sent to [srsearches@umich.edu](mailto:srsearches@umich.edu). Reference position #160375 The University of Michigan is an equal opportunity/affirmative action employer and is responsive to the needs of dual career couples. Women and minority candidates are encouraged to apply.

The Williams College Department of Mathematics and Statistics invites applications for a new tenure-track position in Statistics, beginning fall 2019, at the rank of assistant professor. A more senior appointment is also possible for a qualified candidate at a later stage in their career. The candidate should have a Ph.D. in Statistics or a closely related field by the time of appointment. We are seeking candidates who show evidence and/or promise of excellence in teaching and a strong research program that can engage undergraduate students. The candidate will become the seventh tenure-track statistician in the department, joining a vibrant and innovative group of statisticians with an established statistics major. For more information on the Department of Mathematics and Statistics, visit <http://math.williams.edu>.

Candidates may apply via <https://apply.interfolio.com/50978> by uploading a cover letter addressed to Professor Richard DeVeaux, a curriculum vitae, a teaching statement, a description of research plans, and three letters of recommendation on teaching and research. The Department is committed to building a diverse and inclusive community. In your application materials, we also ask you to address how your teaching, scholarship, mentorship and/or community service might support Williams's commitment to diversity and inclusion.

Expectations: The teaching load is two courses per 12-week semester and a winter term course every other January. The candidate will be expected to teach introductory statistics, core courses for the statistics major, and elective courses in their areas of interest. The successful candidate will establish an independent research program that results in scholarly publications. Williams College provides broad support for start-up funds, funding for student research assistants, faculty professional development funds, and a shared computer cluster for parallel computation.

Review of applications will begin on or after October 1st and will continue until the position is filled. All offers of employment are contingent upon completion of a background check. Further information is available at <https://faculty.williams.edu/prospective-faculty/background-check-policy/>. Williams College is a coeducational liberal arts institution located in the Berkshire Hills of western Massachusetts. The college has built its reputation on outstanding teaching and scholarship and on the academic excellence of its approximately 2,000 students. Please visit the Williams College website (<http://www.williams.edu>). Beyond meeting fully its legal obligations for non-discrimination, Williams College is committed to building a diverse and inclusive community where members from all backgrounds can live, learn, and thrive.



Williams College

## Tenured/Tenure-Track Faculty Position(s)

Cornell University's School of Operations Research and Information Engineering (ORIE) seeks to fill multiple tenured/tenure-track faculty positions for its Ithaca campus. We will primarily consider applicants with research interests in the areas of discrete optimization and financial engineering, especially those individuals who do computation, who work with data, or whose work intersects with machine learning. Nevertheless, we welcome strong applicants from all research areas represented within ORIE, especially those in resonance with the College of Engineering Strategic Areas: <https://www.engineering.cornell.edu/research-and-faculty/strategic-areas-research>.

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

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

Please apply online at <https://academicjobsonline.org/ajo/jobs/11870> with a cover letter, CV, statements of teaching and research interests, sample publications, at least three reference letters and, for junior applicants, a doctoral transcript. All applications completed by November 16, 2018 will receive full consideration, but we urge candidates to submit all required material as soon as possible. We will accept applications until we fill the positions.

ORIE and the College of Engineering at Cornell embrace diversity and seek candidates who can contribute to a welcoming climate for students of all races and genders. Cornell University seeks to meet the needs of dual career couples, has a Dual Career program, and is a member of the Upstate New York Higher Education Recruitment Consortium to assist with dual career searches. Visit [www.unyherc.org/home](http://www.unyherc.org/home) to see positions available in higher education in the upstate New York area. Diversity and Inclusion are a part of Cornell's heritage.

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



We are a recognized employer and educator valuing AA/EEO, Protected Veterans, and Individuals with Disabilities. We strongly encourage qualified women and minority candidates to apply.

■ The University of Michigan department of biostatistics is seeking applicants for one open rank and two tenure-track faculty positions for fall 2019. Outstanding senior candidates will also be considered. Candidates must have a strong research background with a doctoral degree in biostatistics, statistics, mathematics, the computational sciences or a related field. For further details, visit: <https://bit.ly/2O4paze>. Applications from women and minorities are encouraged. EOE/AA.

■ The department of statistics at the University of Michigan, Ann Arbor, invites applications for a tenure-track assistant professor to begin September 1, 2019. Applicants are expected to have demonstrated outstanding research potential and excellence in teaching. Candidates in all areas will be considered. Women and minorities are encouraged to apply. Please apply at [MathJobs.org](http://MathJobs.org). For more information, visit [www.lsa.umich.edu/stats/](http://www.lsa.umich.edu/stats/). The University of Michigan is supportive of the needs of dual career couples and is an equal opportunity/affirmative action employer.

### Mississippi

■ Assistant/associate professor requirements include a doctoral degree in statistics, commitment to effective graduate/undergraduate teaching and demonstrated success in research. Apply online [www.msujobs.msstate.edu](http://www.msujobs.msstate.edu) (PARF 497738), and attach a curriculum vitae/resume and cover letter addressed to Chair, Statistics Search Committee, Department of Mathematics and Statistics, Mississippi State, MS 39762. Submit transcripts, a summary of research plans, a statement of teaching philosophy, and three letters of recommendation. MSU is an equal opportunity employer, and all qualified applicants will receive consideration for employment without regard to race, color, religion, ethnicity, sex (including pregnancy and gender identity), national origin, disability status, age, sexual orientation, genetic information, protected veteran status, or any other characteristic protected by law. We always welcome nominations and applications from women, members of any minority

group, and others who share our passion for building a diverse community that reflects the diversity in our student population.

### Missouri

■ The Division of Public Health Sciences at Washington University School of Medicine invites applications for two faculty positions: Co-leader of the Siteman Biostatistics Shared Resource (SBSR), a tenure-track/tenured position (associate or full professor), and any rank for a SBSR biostatistician. Candidates with biostatistics expertise in cancer and application of state of the art methods across the cancer care continuum are desired. Learn more: <https://bit.ly/2yHWPVg>. Washington University School of Medicine is an equal opportunity employer.

### Nebraska

■ The department of biostatistics at the University of Nebraska Medical Center (UNMC) College of Public Health is seeking candidates for the next chair of the department. To be considered the candidate should have a PhD, degree in biostatistics or statistics. For a full position description and to apply, visit: <https://bit.ly/2Ro5LYo> UNMC is an equal opportunity/affirmative action employer. Individuals from diverse backgrounds are encouraged to apply.

■ Five tenure-track assistant professor positions, department of statistics, Institute of Agriculture and Natural Resources, University of Nebraska-Lincoln, start August 2019. Submit letter of interest, CV, contact information for three professional references, combined research and teaching statements (each one page) as 'other document'. See <https://employment.unl.edu> (requisition # F\_180165) for complete application information and instructions. Application review begins 12/15/2018. As an EO/AA employer, qualified applicants are considered for employment without regard to race, color, ethnicity, national origin, sex, pregnancy, sexual orientation, gender identity, religion, disability, age, genetic information, veteran status, marital status, and/or political affiliation. See <https://bit.ly/2yh3syo>.

## Statistical Career Opportunities with Westat

Westat is an employee-owned corporation headquartered in Rockville, Maryland. We provide statistical consulting and survey research to the agencies of the U.S. Government and to a broad range of business and institutional clients. With a strong technical and managerial staff and a long record of quality research, Westat is a leader in the statistical services field.

We are currently recruiting for the following position:

### Survey Sampling Statistician

This position requires a master's degree or Ph.D. in statistics with coursework in survey sampling or a master's or Ph.D. in survey sampling. Candidates with a master's must have at least 8 years of experience in sample survey design, selection, or weighting and a Ph.D. with 6 years' experience. Although not required to do programming, candidates would benefit from knowing SAS and other statistical software packages. Qualified candidates must have excellent written and oral communication skills, strong organizational skills, and the ability to handle multiple tasks simultaneously.

Westat is an Equal Opportunity Employer and does not discriminate on the basis of race, creed, color, religion, sex, age, national origin, veteran status, disability, marital status, sexual orientation, citizen status, genetic information, gender identity, or any other protected status under applicable law. To apply, go to [www.westat.com/careers](http://www.westat.com/careers).

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

### North Carolina

■ Wells Fargo is inviting applications for its quantitative associate programs. Please see the following links for job description and for information on how to apply. Wells Fargo Quantitative Associate Program – Credit & Operational Risk (masters) Quantitative Associate Program – Credit & Operational Risk (PhD) <https://bit.ly/2DW6KMN> Wells Fargo is an EOE.

■ The University of North Carolina at Greensboro seeks a founding director who holds a PhD degree and data science experience on a 12-month tenure-track or tenured appointment for its newly established master of science in informatics & analytics program. Submit application material at <https://bit.ly/2N1DwpK> For information, contact the search chair Sat Gupta at [msia@uncg.edu](mailto:msia@uncg.edu). UNCG is an EOE//M/F/D/V

# Job hunting?

# The ASA can help!



CHECK OUT  
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RESOURCES

1

**JOBWEB**, our targeted job database and résumé-posting service, [www.amstat.org/jobweb](http://www.amstat.org/jobweb)

2

**JSM CAREER SERVICE**, our onsite JSM interview service connecting hundreds of applicants to hundreds of positions and recruiters from more than 70 employers, [www.amstat.org/meetings/jsm](http://www.amstat.org/meetings/jsm)

3

**AMSTAT NEWS**, our monthly membership magazine, featuring job opportunities in every issue

## Faculty Position Operations Research and Information Engineering (ORIE)

A faculty position in Operations Research and Information Engineering (ORIE) is available at the Cornell Tech campus in New York City. The position is part of the Jacobs Technion-Cornell Institute, and we particularly encourage candidates whose work fits into Jacobs Institute application-domain emphases in the areas of urban technology, especially related to the intersection of digital and physical systems, and digital health technologies.

The position is within Cornell University's School of ORIE, and applicants with research interests represented within Cornell ORIE are welcome at all levels, including tenured and tenure-track. The School consists of a diverse group of high-quality researchers and educators interested in probability, optimization, statistics, simulation, and a wide array of applications such as e-commerce, supply chains, scheduling, manufacturing, transportation systems, health care, financial engineering, service systems and network science. Cornell ORIE spans both the Ithaca and New York City campuses, but the successful candidate's teaching and research will be based in New York City. (Interested candidates can apply for a Cornell Tech in NYC position, a Cornell Ithaca ORIE position, or both, but the two campuses have different application sites; please see the Cornell Ithaca ad for the Ithaca application URL).

Candidates must hold a Ph.D. in operations research, mathematics, statistics, or a related field by the start of the appointment, and have demonstrated an ability to conduct outstanding research at the level of tenure-track or tenured faculty in Cornell ORIE. They must also have a strong commitment to engagement outside of academia in ways that foster significant commercial or societal impact, as aligned with the mission of the Cornell Tech campus. The Institute seeks candidates with demonstrated transdisciplinary interests and a track record of translational science. The successful candidate will be expected to pursue an active research program, to teach Master's and Ph.D.-level graduate courses, and to supervise graduate students.

All applications completed by November 16, 2018 will receive full consideration, but we urge candidates to submit all required material as soon as possible. We will accept applications until we fill the positions. Applicants should submit a curriculum vitae, brief statements of research and teaching interests, and the names and contact information of at least three references. They should also identify one or two top publications to which they have made significant contributions. A distinguishing characteristic of research at Cornell Tech, in addition to world-class academic work, is that it engages deeply with external communities, organizations, K-12 education, and industry to address real-world problems and contexts that amplify the direct commercial and societal impact of our research. Accordingly, within a clearly identified subsection of the research statement, the candidate should address prior accomplishments and future plans related to this kind of direct commercial and/or societal impact of their research. Applications are on-line at

<https://academicjobsonline.org/ajo/jobs/12018>

Inquiries about your application may be directed to Sheri Minarski at [slm339@cornell.edu](mailto:slm339@cornell.edu).



*Diversity and Inclusion are a part of Cornell University's heritage. We are a recognized employer and educator valuing AA/EEO, Protected Veterans, and Individuals with Disabilities.*

## ACADEMIA SINICA INSTITUTE OF STATISTICAL SCIENCE

### Tenure-Track Research Positions

Applications are invited for tenure-track appointments as Full/Associate/Assistant Research Fellows in the Institute of Statistical Science, Academia Sinica (ISSAS), to commence on August 1, 2019 or as soon as possible thereafter. Applicants should possess a Ph.D. degree in Statistics, Data Science or related areas, and should submit: (1) a cover letter, (2) an up-to-date curriculum vita, (3) a detailed publication list, (4) a research proposal, (5) three letters of recommendation, and (6) representative publications and/or technical reports. Additional supporting materials such as transcripts for new Ph.D. degree recipients may also be included. Electronic submissions are encouraged. Applications should be submitted to

Dr. Frederick Kin Hing Phoa  
Chair of the Search Committee  
Institute of Statistical Science, Academia Sinica  
128 Sec. 2 Academia Road, Taipei 11529,  
Taiwan, R.O.C.  
Fax: +886-2-27831523  
E-mail: [recruit@stat.sinica.edu.tw](mailto:recruit@stat.sinica.edu.tw)

Application materials should be received by **December 15, 2018** for consideration, but early submissions are encouraged.

employer and are strongly committed to increasing faculty diversity.

### Pennsylvania

■ The University of Pittsburgh department of statistics is seeking applications for lecturer beginning September 2019, pending budgetary approval. Positions are outside the tenure stream with the expectation of multiyear contract renewals. Candidates should have a PhD in statistics, biostatistics or related field and a demonstrated talent for teaching undergraduate statistics courses and mentoring students. Position details are available at <https://bit.ly/2yage0L>. The University of Pittsburgh is an affirmative action/equal opportunity employer and values equality of opportunity, human dignity and diversity. EEO/AA/M/F/vets/disabled.

## Opportunities in Biostatistics

### Co-Leader for Biostatistics Shared Resource Available

The Division of Public Health Sciences in the Department of Surgery at Washington University School of Medicine in St. Louis invites applications for two faculty positions: one as a co-leader of the Siteman Biostatistics Shared Resource (SBSR), a tenure-track/tenured position at the rank of Associate or Full Professor; and the other at any rank for a biostatistician to serve in the SBSR. Located in the Division of Public Health Sciences, these faculty positions align to work alongside Siteman Cancer Center members to further cancer research through biostatistics collaborations. The diverse faculty in the division collaborate with departments across the university through teaching, mentoring, and research projects. Leadership within the Siteman Cancer Center supports engaging one or more senior investigators into this shared resource which already supports two SPORes (Pancreas and Leukemia) and others are possible, in addition to numerous team science awards.

We are particularly interested in candidates with biostatistics expertise in cancer and application of state of the art methods across the cancer care continuum. Learn more at [www.publichealthsciences.wustl.edu](http://www.publichealthsciences.wustl.edu).

The SBSR provides support consultation and collaboration on biostatistics and epidemiology. The facility supports cancer research through experimental designs, study monitoring, and data analyses. We utilize efficient methods that reflect the best practices in biostatistics and epidemiology. The Division of Public Health Sciences is rich with opportunity for innovative research and conducts transdisciplinary research addressing cancer risk across the life course and across generations, from conception to workplace and survivorship. The Siteman Cancer Center Prevention and Control program brings together more than fifty investigators who are studying the relations among biological, genetic, psychological, and epidemiological factors. Studies range from genetic investigations to clinical outcomes, and community-based participatory research.

To apply, send a cover letter, curriculum vitae and professional reference list by email to [repkot@wustl.edu](mailto:repkot@wustl.edu) or mail to Tammie Repko, Division of Public Health Sciences, Department of Surgery, Washington University School of Medicine, 660 S. Euclid Ave., Campus Box 8100, St. Louis, MO, 63110. Washington University School of Medicine is an equal opportunity employer.



# Williams College

■ The University of Pittsburgh department of statistics is seeking applications for associate or full professor beginning September 2019, pending budgetary approval. The candidate should have a strong methodological research program in mainstream modern statistics, with a solid record of publications and research funding. The successful candidate must also demonstrate excellence in teaching, mentoring graduate and/or undergraduate students, and administration. Applicants can apply online: <https://bit.ly/2P9CMFV>. The University of Pittsburgh is an affirmative action/equal opportunity employer and values equality of opportunity, human dignity and diversity. EEO/AA/M/F/vets/disabled.

■ The Wharton statistics department, University of Pennsylvania, seeks full-time, tenure-track or tenured faculty at any level: assistant, associate, or full professor, appointment beginning July 2019. Applicants must show outstanding capacity in research and teaching. Applicants must have a PhD (expected completion by June 30, 2020 is acceptable) from an accredited institution. Please visit our website to apply: <https://wharton.upenn.edu/statistics/recruit>. Questions can be sent to [statistics.recruit@wharton.upenn.edu](mailto:statistics.recruit@wharton.upenn.edu). The University of Pennsylvania is an EOE. Minorities / women / individuals with disabilities / protected veterans are encouraged to apply.

■ Tenure-track/tenured faculty positions in data science for large astronomical surveys, Penn State University is adding new open-rank faculty positions to build on existing excellence in astrophysics, data sciences, computational and statistical sciences, through a cluster hire with a theme of data sciences for application to large astronomical surveys, such as the Large Synoptic Survey Telescope (LSST; <https://www.lsst.org/>). Apply online at <http://apptrkr.com/1293201>. EOE.

## Texas

■ The department of mathematical sciences at UTEP seeks a data scientist with expertise in statistical modeling

The Williams College Department of Mathematics and Statistics invites applications for a one-year visiting position in statistics, to begin fall 2019. Candidates should have earned a Ph.D. in statistics, or a related field by summer, 2019. We will consider candidates with any area of statistical expertise.

Visiting Assistant Professors are asked to teach four courses per year on our 12-week semester schedule, advise several undergraduate student colloquia (our capstone experience for seniors), and make small contributions to service activities in the department. This set of professional duties provides a window into the experience of being a statistician in a liberal arts setting.

Our department offers a vibrant undergraduate program with majors in mathematics (including an applied mathematics emphasis) and in statistics. For more information, see our website. The multidisciplinary environment is a rich and collegial setting for student education and faculty research. Williams College provides: the opportunity to apply for student research assistant support; a standard, annual allocation of funds to support travel and research; and a shared computer cluster for parallel computation. Visiting Assistant Professors are also eligible to participate in the college's comprehensive First3 professional development program.

Approximately one hour from the Albany, NY airport, Williams College is located in Williamstown, a thriving destination proximate to: three major art museums; theater, music, and dance festivals; community supported agriculture farms; a highly-rated public school system; and many other resources. The Williams undergraduate student body has 40% U.S. minority enrollment and nearly 10% international enrollment. Reflecting the institution's values, our department is diverse and inclusive, with 50% of our faculty being women, people of color, and/or members of the LGBTQ+ community. We encourage applications from members of underrepresented groups with respect to gender, race and ethnicity, religion, sexual orientation, disability status, socioeconomic background, and other axes of diversity.

Applications should be submitted via <https://www.apply.interfolio.com/54115>. Your application should include the following components.

1. Please provide a cover letter. This letter might describe your interest in Williams and in the liberal arts, and provide a brief summary of your professional experience and future goals. We ask you to address how your teaching, scholarship, mentorship and/or community service might support Williams' commitment to diversity and inclusion.
2. Please provide a current curriculum vitae.
3. Please provide a teaching statement. Ideally, this statement should be 2 - 3 pages long, and it might address your teaching philosophy, teaching experience, and any other reflections or relevant information you would like to share.
4. Please have at least three recommenders submit letters of recommendation. If possible, at least one of these letters should comment on your teaching or on any other instructional capacities in which you have served.

If you have questions about this position, contact search committee chair Richard De Veaux ([rdeveaux@williams.edu](mailto:rdeveaux@williams.edu)). Review of applications will begin on or after November 1 and will continue until the position is filled. All offers of employment are contingent upon completion of a background check. Further information is available at <https://faculty.williams.edu/prospective-faculty/background-check-policy>.

Williams College is a coeducational liberal arts institution located in the Berkshire Hills of western Massachusetts. The college has built its reputation on outstanding teaching and scholarship and on the academic excellence of its approximately 2,000 students. Please visit the Williams College website. Beyond meeting fully its legal obligations for non-discrimination, Williams College is committed to building a diverse and inclusive community where members from all backgrounds can live, learn, and thrive.

for big data and/or high performance data analytics, for a tenure-track assistant professor position. Successful candidates will develop productive research programs, mentor and teach undergraduate and graduate students, and direct data science PhD dissertations. View full ad and apply at <https://bit.ly/2DQNRdU> UTEP is an equal opportunity employer.

## Utah

■ The department of mathematics and statistics at Utah State University invites

applications for a tenure-track assistant professor position in statistics to begin August 2019. Must have a PhD in statistics, biostatistics, or a closely related field, and demonstrate strong potential for excellence in both research and teaching. Candidates should demonstrate potential for collaboration with other disciplines at USU. EEO Employer/veterans/disabled <https://bit.ly/2QnCBai>. View advertisement at <https://bit.ly/2xWiyJk>. EEO employer/veterans/disabled.

## International

■ Applications are invited for regular faculty positions at any level in data science. A PhD in statistics or a related field is required. Applicants should send an application letter, CV, a research and a teaching statement and arrange for 3 reference letters to be sent to: Search Committee, Dept of Statistics and Applied Probability, National University of Singapore, E-mail: [stasec@nus.edu.sg](mailto:stasec@nus.edu.sg). More information at website: <https://nus.edu/2IASz37>. EOE. ■

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PS Form 3526, September 2007 (Page 2 of 3)				

## SOCIAL CHATTER

# What book about statistics do you recommend for nonstatisticians?



**Mario Cortina Borja** • @cortina\_borja  
*Principles of Applied Statistics*, by David Cox & Christl Donnelly

**Jorge de la Vega G** • @jdlvega  
Freedman, Pisani and Purves: *Statistics*.  
Very intuitive, based on real problems.

**Erika Cule** • @erikacule For frequentist basics I like *Statistics at Square One* and its successor *Statistics at Square Two*. I also like the explanation of regression to the mean in @bengoldacre's *Bad Science*.



**Barry D Nussbaum** • @StatisticsBarry  
Darrell Huff's *How to Lie With Statistics*

(|~|r!\$ (|~|@\\!\$ • @ChrisJChallis  
Derek Rowntree's *Statistics Without Tears*; accessible, lecture-style learning.  
It's a wonderful introduction.



**Kevin M De Silva**

2 books: What got me interested in statistics in the first place: (1) *The Lady Tasting Tea* by David Salzgub and (2) *Statistics* by Freedman, Pisani and Purves. 10 years later I'm still on the journey those books inspired, having converted from software development.

**Ed Pezanova** As a nonstatistician, thank you!

**Arnab K Laha** All of *Statistics* by Larry Wasserman for the mathematically equipped non-statistician and *Statistics* by Freedman, Pisani and Purves for someone without the mathematical background.

**Simon Lessard Bonaventure** *How to Lie With Statistics* 🍷 #classics

Next month, we'll ask: What's a great gift for a statistician?

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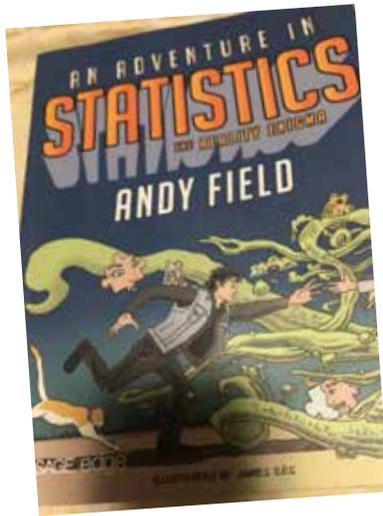
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**Mary O’Keeffe** • @MaryOKeeffe007

MaryOKeeffe007

This one is great! I really enjoy it



**Virginia Fisher** • @VAFisherPhD

I really like David Freedman’s *Statistical Models* for applied researchers. It has nice discussion of assumptions required for causal inference in the context of regression.

**Catey Bunce** • @CateyBunce

If working in medicine would always advise Altman

**Emma Benn** • @EKTBenn

Yes I recommend Altman too for a clinical audience.

**Neville Calleja** • @nevillecalleja

I would support *Factfulness* by Hans Rosling definitely for a good understand of the story behind the figures. I also recommend *Medical Statistics Made Easy* to my non-statistician health students to learn statistical methods.



**Iram Hasan**

It depends – what does non-statistician want to learn about statistics. For beginner level, introductory *Applied Statistics* books are the best in relevant field.

**Stephen J Grilli** *The Theory That Would Not Die*, by Sharon Bertsch McGrayne, about the development of Bayesian methods.

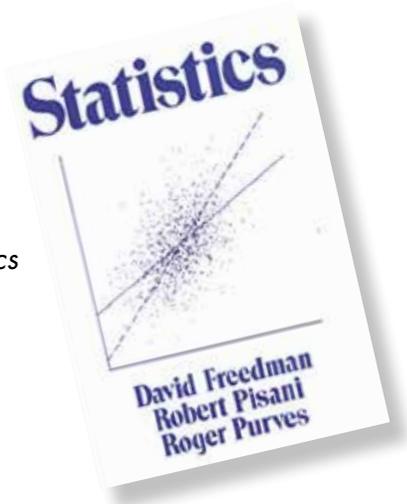
**Richard Devlar**

*Statistical Rethinking*. It is a textbook but it reads like a book written for humans.

**Joaquín Molina**

*Introduction to Mathematical Statistics* by Hogg, MacKean & Craig...Pankaj Dey *Introduction to Statistics* by Giri and Banerjee; *Statistics* by Friedman, Pisani and Purves.

**Jenner Trejo** *Statistical Methods for Social Sciences*



**Mis Gee Tort** *Introduction to Probability* by Sheldon Ross



**Chino Montero** *Biometry*, Sokal and Rholf

**Kehinde Mercy** *Business Statistics*

**Khansa Waqar** *Introduction to Statistics* by walpole

**Bess Rose** *Weapons of Math Destruction*. <https://weaponsofmathdestructionbook.com>



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## Tenure-Track/Tenured Faculty Positions in Data Science for Large Astronomical Surveys

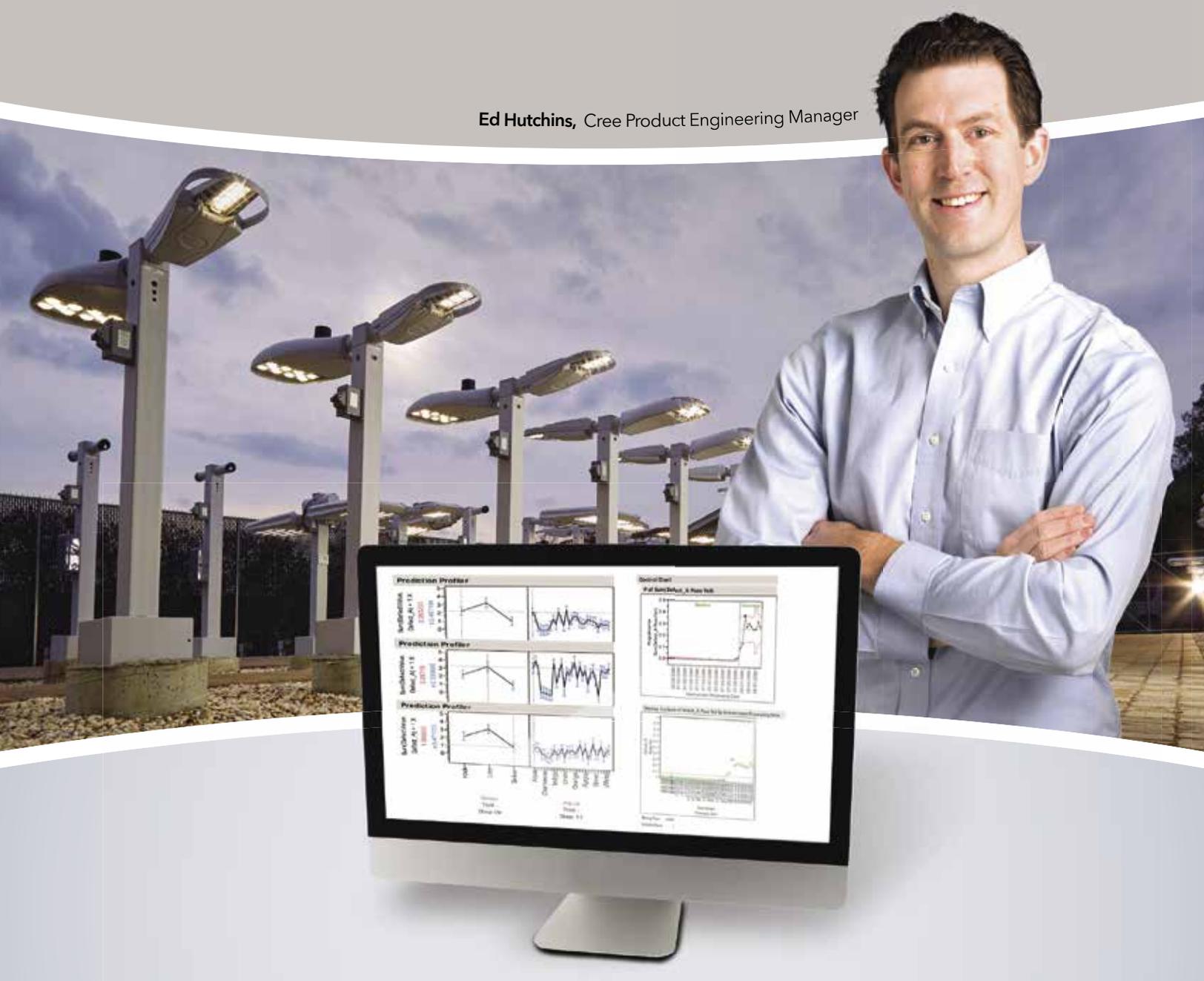
Penn State is adding new open-rank faculty positions to build on existing excellence in astrophysics, data sciences, computational and statistical sciences, through a cluster hire with a theme of Data Sciences for application to large astronomical surveys, such as the Large Synoptic Survey Telescope (LSST; <https://www.lsst.org/>). We seek outstanding data scientists with experience applying advanced statistical and computational methods to making research breakthroughs with large astronomical surveys, a compelling vision for extending their research program into the LSST-era, and a demonstrated commitment to interdisciplinary research and education. This cluster hire initiative at Penn State is a partnership of the Institute of CyberScience (ICS; <https://ics.psu.edu/>) with the College of Engineering (CoE; <https://www.engr.psu.edu/>), College of Information Sciences and Technology (IST; <https://www.ist.psu.edu/>), and the Eberly College of Science (ECoS; <http://science.psu.edu>). New faculty will be offered an appointment and tenure home in one of many excellent Departments in CoE, IST or ECoS and will be encouraged to pursue multidisciplinary research in collaboration with faculty across these departments and ICS. Successful candidates will have a Ph.D. in a relevant field (e.g., astronomy, astrophysics, big data systems, computer science, data sciences, high-performance computing, informatics, machine learning, physics, or statistics) prior to starting. We encourage applications from individuals of diverse backgrounds, candidates interested in developing interdisciplinary research programs to increase the scientific impact of LSST, and candidates interested in teaching in Computer Science (<https://www.eecs.psu.edu/>) and/or Data Sciences, a new intercollege undergraduate major (<https://datasciences.psu.edu/>). The Institute for CyberScience, one of Penn State's five university-wide research institutes, connects researchers from numerous disciplines to answer critical scientific questions and societal issues through cyber-enabled research and methodology. ICS has nearly 300 affiliated faculty, with over 20 tenure-track co-hired faculty, engaged in interdisciplinary computation and data enabled research. Our affiliated faculty utilize our ICS operated Advanced Cyber Infrastructure (ICS-ACI), Penn State's high-performance research cloud, which is in the top 15 among our peers. Successful candidates will become part of the Institute for CyberScience. They will be expected to contribute to a collaborative, interdisciplinary, scholarly community focused on the development and application of innovative computational and statistical methods. Candidates are encouraged to identify collaboration opportunities within ICS and/or Penn State's others centers of excellence, such as the Center for Astrostatistics (<http://astrostatistics.psu.edu/>), Center for Big Data Analytics and Discovery Informatics (<http://discovery-informatics.ist.psu.edu/>), Center for Machine Learning and Applications (<https://cmla.cse.psu.edu/>), and Institute for Gravitation and the Cosmos (<http://gravity.psu.edu/>). Penn State offers access to an outstanding collaborative environment, world-class instrumentation and research facilities, as well as highly competitive salaries and startup packages. Penn State is a member institution of the LSST, a partner in the Hobby-Eberly Telescope (HET) and the HET Dark Energy Experiment (<http://www.hetdex.org>), a Participating Institution in the Sloan Digital Sky Survey, a major partner in the Chandra and Swift X-ray observatories, and home to Astrophysical Multimessenger Observatory Network (<https://www.amon.psu.edu/>). University Park is Penn State's largest campus with an enrollment of approximately 46,000 students and offers more than 100 programs of graduate study. The surrounding community of State College is a quintessential university town well known for its exceptional quality of life, including a low cost of living, a growing economy, a diverse offering of cultural and recreational opportunities, and excellent resources for families, including two on-campus child care centers and well regarded local school systems. To apply, please upload only basic personal information, but not other information listed below. In addition, interested applicants must submit the following material to Academic Jobs Online (<https://academicjobsonline.org/ajo/jobs/11590>) for the application to be complete: (1) cover letter; (2) curriculum vitae including publications list; and (3) a description of future research plans and teaching interests. Applicants should also arrange for three references to be submitted via AcademicJobsOnline. In order to accommodate the multidisciplinary nature of this search review of applications will begin October 1, 2018 and continue until all positions are filled. Complete applications received by December 31, 2018 are guaranteed to receive full consideration. We welcome informal inquiries regarding these positions to <mailto:LSST-Data-Science-Questions@lists.psu.edu>.

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Penn State is an equal opportunity, affirmative action employer, and is committed to providing employment opportunities to all qualified applicants without regard to race, color, religion, age, sex, sexual orientation, gender identity, national origin, disability or protected veteran status.

Ed Hutchins, Cree Product Engineering Manager



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