

January 2019 • Issue #499

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The University of Texas MD Anderson Cancer Center
P.O. Box 301402, Houston, TX 77230-1402
Email: biostat-search@mdanderson.org

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

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What Does Doug Tyson 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.

- 26 **STATS4GOOD**
Data for Good: The Year in Review

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.

- 28 **STATtr@k**
From Graduate Student to Assistant Professor

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.

- 30 **MASTER'S NOTEBOOK**
Making Decisions for a Long, Satisfying Career

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

In 2017, Mathematics Awareness Month became **Mathematics and Statistics Awareness Month** (MSAM). Two years later, we are still not done celebrating! Here at the ASA, we're already preparing for April 2019. Keep your eyes on *Amstat News* for updates as spring approaches and we roll out the fun. In the works: a poster, virtual science fair, and live Q&A sessions about solving problems with statistics for students and teachers.



Larry Lesser of The University of Texas at El Paso repurposed Madonna's signature song (and #2 hit), "Material Girl," written by Peter Brown and Robert Rans, to teach the empirical rule.

Empirical Rule

lyric © 2017 Lawrence M. Lesser

Data values normally are
no more far away
Than 3 standard deviations
from the mean displayed.

And within 2 deviations, 19 of 20 lie, that's right!

And within 1 deviation, 2/3 are confined,

CHORUS: 'Cause we are living in an empirical world
and I need an empirical tool.

You know that we are living in an empirical world
and I use the empirical rule!

If I think a population
looks bell curve to me,

The rule helps tag outliers like a
z-score more than 3.

But if the population may not
take the normal shape (no way!),

Frequencies that you expect can
help you ascertain.

(Repeat Chorus)



CORRECTION On Page 33 of the December issue, the members of the Indiana student chapter were listed under their photo in the wrong order. They are, from left: Maggie Christy (student volunteer), Vahid Andalib (chapter officer), Alex White (chapter officer), and Aida Yazdanparast (chapter officer).

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New Year's Resolution: Working Together to Make an Impact with Statistics

It is a pleasure to serve as ASA president as we welcome 2019 and to have the opportunity to thank our many members who make the ASA a professional home for statisticians and data analysts, as it has been for me. I was honored and gratified to receive many offers of help, as the ASA would not exist without its members. I hope the year will be an exciting one for all of us.

Among the many members who deserve special thanks are those who serve on our annual board of directors; lead our chapters, sections, and committees; and participate in their activities. The real work of ASA is done by them and by you, facilitated by the hard-working ASA staff, and I am grateful to all of you for your ideas and efforts. Keep those ideas coming! They are key to the ASA's success, impact, and relevance to our membership and society.

Every ASA president is asked to pursue initiatives that, we hope, will outlive the president and take on lives of their own. In developing initiatives for 2019, I reflected on my remarks prepared in the March 2017 issue of *Amstat News* (<https://magazine.amstat.org/blog/2017/03/01/2018-asa-board-of-directors-candidates>).

Our discipline faces many challenges, both technical and professional. We have seen how the work of statisticians has made enormous contributions in many fields of science and policy. How can we continue to make those contributions in the face of rapidly changing technologies, data collection, and computation? Our strengths lie in collecting and analyzing data and in drawing inferences from them. Other disciplines continue to challenge us in these areas, but I believe we can prevail by facing complex problems and showing our skills and impact.

Accordingly, the theme for JSM 2019 (July 27 – August 1 in Denver, Colorado) is “Making an Impact.” Many of us—certainly I—chose this profession out of a hopeful desire to solve real problems that will have lasting societal effects. Impactful work can arise as academic teaching and research, government advice and policy, and industrial operations and strategies.

I am pleased Richard Levine of San Diego State University has agreed to serve as 2019 JSM Program

Committee chair, ably assisted by co-chairs Nicole Lazar and Duane Steffey and the rest of the hard-working program committee, to carry this theme into action. The deadline for submitting a contributed paper or poster is February 1, so I hope many of you will share your experiences of making an impact with your colleagues at JSM. I look forward to seeing and hearing about them!

My three initiatives center on promoting the ASA's leadership in identifying problems and coordinating efforts where statistics, through collaboration with others, can make a difference. My first initiative is an example of one such problem, the second generalizes to a structure that makes collaboration possible, and the third addresses the recruitment of talent needed to solve these problems.

'Fake News' ('Disinformation')

As one JSM attendee mentioned to me last year, errors in reporting and journalism are not new. But today's technology can spread disinformation at lightning speed, sometimes with disastrous consequences. Understanding how claims are spread via social media and online communities is essential to ensuring the public is not misled by “fake news.”

Computer scientists are developing algorithms to classify stories and images as “legitimate” or “illegitimate” (some, if not most, news articles have elements of both); see, for example, the March 9, 2018, issue of *Science*. Statisticians have worked on classification since well before Fisher's linear discriminant analysis. But the volume, variety, and nature of news articles are immense, so “classification” algorithms need both sound theoretical foundations and the knowledge to implement them even faster than the stories can be generated.

I am delighted that this initiative is under the able leadership of 2016 ASA President Jessica Utts, whose themes during her tenure included “communication with the media” and “statistical education,” and Jun Yang, co-chair of Duke's computer science department who has contributed much research in this area. They hope to develop the following:

- A research agenda and plan for encouraging statisticians and data scientists to engage in research and collaborate in this area



Karen Kafadar

- A plan for creating mechanisms (public information campaign or venues for dissemination) that will help the public understand and be less influenced by fake news.
- Showcase progress and outcomes of the collaborations

The membership of the task force therefore includes statisticians, computer scientists, psychologists, and journalists.

Impact

Fake news is just one area in which statisticians, in collaboration with other scientists, can make an impact. Complex problems—such as detecting emerging epidemics, ensuring food safety, protecting our communications, and establishing reliable standards—cannot be solved by single individuals or even single disciplines. What talents do these projects need, and how can the ASA be prepared to lead the research and collaboration on them with statistically sound approaches?

Throughout his career at the US Centers for Disease Control and Prevention (CDC), ASA Vice President David Williamson has encountered many high-profile situations in which his input as a statistician was critical (as have we all), so I am thrilled David has agreed to lead this initiative.

On what problems has your work made a difference, and how did your involvement arise? For example, can statisticians work with geologists and environmental scientists in assessing the risks and benefits of fracking? (Byran Smucker at Miami of Ohio has agreed to serve on this task force, as he has contacts already thinking about this problem.) We need to anticipate these needs before others capitalize on our delay and develop attractive, but flawed, approaches.

A key aspect to the initiative's success is the identification of research areas where problems need teams that include statistical thinking, design, experimentation, data collection, and analysis. Donna LaLonde, ASA director of strategic initiatives and outreach, has created a form so you can share your thoughts about high-impact problems in which statistics can and should be involved (<http://bit.ly/ASAImpact>). Such identified areas will lead the task force toward types of mechanisms that can successfully coordinate research teams in future years.

The goal of this initiative will be to advise ASA on mechanisms that do the following:

- Identify important problem areas in which statistics is needed
- Coordinate teams of researchers to work on such problems
- Make ASA members aware of high-profile, high-impact opportunities and how they can participate

Recruiting Talent into Our Profession

Our profession is filled with talented people—and much more talent remains untapped, largely because whole communities are unaware of our field. The challenges described in the first two initiatives require diverse talent that include domain scientists and the best statistical solutions from statisticians we attract to our field to face big problems. How can we collaborate with other organizations to recruit talent among underserved populations who would be attracted to statistics if they knew about its importance and opportunities?

Board member Julia Sharp has graciously agreed to lead this initiative, whose charge includes the following:

- A plan for engaging the leadership of other organizations in establishing a joint committee that will focus on recruiting minorities and first-generation college students into statistics
- A plan for developing a sustainable source of funding to support the initiatives of the joint committee

Sixty years ago, John Tukey wrote the following in *The American Mathematical Monthly*:

It is easy to look ahead and see major problems before us, before all the people of this country, in which scientific and technical matters play an important part. ... To be spared the responsibility of working on any of them would make anyone's life simpler and more pleasant. But many, both scientists and others, will have to do what they can to clarify the issues and offer good advice ... [statisticians] will have to give up the protection of unquestioned hypotheses and contribute their best acuteness and wisdom under uncomfortable circumstances.

It is a pleasure to start 2019 as ASA president at a time when Tukey's remarks are perhaps more important than when he wrote them. I look forward to working with you to institutionalize our efforts to seek out challenges, identify where and how statistics can contribute, and marshal the diverse talent needed to address these challenges so that we, as a profession, can contribute much-needed "acuteness and wisdom under uncomfortable circumstances."



Highlights of the November 2018 ASA Board of Directors Meeting

ASA President Lisa LaVange convened the final ASA Board meeting of 2018 at the ASA office in Alexandria, Virginia. The highlights of the meeting follow.

Discussion Items

- The board received the interim report of the ad hoc Task Force on Sexual Harassment and Assault and an interim summary of the questionnaire distributed to membership. The board thanked the task force for its excellent work in developing a new policy and in making other key recommendations.
- As it does each December, the board reviewed the ASA's Strategic Plan and steps being taken to implement it. The plan continues to serve the association well.
- The board was updated on the status of *The American Statistician's* special issue on statistical inference, which will be published in early 2019. Ron Wasserstein and Allen Schirm, who along with Nicole Lazar are the co-editors of the special issue, provided the board a "sneak preview" of the content and their conclusions about it.
- As it does annually, the board discussed the status of committees in the Education Council and the Professional Issues and Visibility Council. These councils serve as the connection between their committees and the board. The board expressed gratitude for the great work these committees do on behalf of the profession and association.

Action Items

- The board created an ad hoc advisory committee on data science, charged with advising the board on steps the association should take to realize its goal of being a home for data science and data scientists.
- The board adopted a revised "ASA Activities Conduct Policy." (bit.ly/2RSI6iy) Quoting: "[I]t is the policy of the ASA that all participants in ASA activities enjoy a welcoming environment free from unlawful discrimination, harassment, and retaliation. We strive to be a community that welcomes and supports people of all backgrounds and identities."

2018 Board of Directors

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- **Jim Lepkowski**, Second-Year Council of Sections Representative
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- **Cynthia Bocci**, International Representative
- **Scott Evans**, Publications Representative
- **Amarjot Kaur**, Treasurer
- **Ron Wasserstein**, Executive Director and Board Secretary

- The board updated its statement on avoiding implicit bias. The previous statement was worded to apply to awards committees. The revised statement applies to all committees involved in making selections or nominations.
- The board approved "Statement of Concern for the USDA Economic Research Service and on the Vital and Unique Role of Federal Statistical Agencies (bit.ly/2zVh3w6)." In summary, the statement said, "For the continued maximum benefit of evidence-based policymaking in the food, agriculture, and rural economy, the ASA Board of Directors

urges the USDA Economic Research Service be kept geographically in the national capital region and administratively in the USDA Research, Education, and Economics mission area at least until a comprehensive, independent cost-benefit analysis has been completed, reviewed, and discussed.”

- The board created the Leadership Institute Steering Committee to oversee the institute programming, approve new endeavors, cultivate external collaborations, and advise the board about strategic opportunities in professional development. The Leadership Institute will be the umbrella organization for the ASA’s professional development programming.

Reported Items

- Associate Executive Director and Director of Operations Steve Porzio updated the board on ASA financials through the third quarter of 2018. He reported on revenue sources for the ASA, comparing each with recent years.
- ASA Treasurer Amarjot Kaur also updated the board on the status of the ASA’s investments. Market value as of September 30 was about \$21.2 million; however, Kaur noted subsequent market volatility had largely wiped out gains for the current year.
- The board received progress reports on the strategic initiatives launched by ASA President Lisa LaVange. In addition, ASA President-elect Karen Kafadar updated the board on her ideas for 2019.
- ASA Director of Development Amanda Malloy reported that the first ASA Giving Day was highly successful. Some \$81,000 was raised, thanks in no small part to a \$30,000 matching gift provided by current and former board members.
- The Council of Chapters Governing Board (COCGB) and Council of Sections Governing Board (COSGB) reported on their recent activities. The COCGB reviewed many matters, including traveling courses, revisions of the COC Responsibilities Manual and Charter, and chapter-to-chapter mentoring. The COSGB also revised its charter. It developed a leadership workshop and recognition program for section officers and conducted a section annual survey. The board approved the new charters of both groups, subject to final Executive Committee approval after minor changes.
- ASA Science Policy Director Steve Pierson updated the board on several important matters, including the citizenship question on the decennial census, status of proposed

2019 Board of Directors

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changes to the USDA Economic Research Service, proposed realignment of the Bureau of Transportation Statistics within the Department of Transportation, status of science and statistical agency budgets, and continued persecution of Greek statistician Andreas Georgiou.

- Pierson, along with incoming ASA Vice President Dick De Veaux, discussed the ASA’s ongoing sponsorship of the Data Science and Advanced Analytics Conference as part of efforts to raise the profile of statistics in data science in the ASA.
- Brian Harris-Kojetin, director of the Committee on National Statistics (CNSTAT), updated the board on the latest news from CNSTAT. Collaborations between the ASA and CNSTAT were also proposed for board consideration.

The board next meets April 5–6, 2019, at the ASA office in Alexandria, Virginia. ■

New Sections Added to *Journal of Statistics Education*

Jeff Witmer, *JSE* Editor

As the *Journal of Statistics Education's* (*JSE*) newly appointed editor, Jeff Witmer will serve for the next three years and plans to add at least two sections to the journal: Teaching Statistics in the Health Sciences and Teaching Data Science.

Teaching Statistics in the Health Sciences, which is being headed by Matt Hayat, will address the needs and interests of those who teach students in disciplines such as dentistry, medicine, nursing, pharmacy, and public health.

Teaching Data Science, headed by Nick Horton, will include a mixture of “what” and “how” articles. What should students learn about computation and data technologies? How should analytic tools and workflows be taught? This new section will (a) help statisticians be aware of what is happening at the intersection of statistics, computer science, and domain application areas and (b) help those who have meager computer science skills develop greater facility with sophisticated algorithmic foundations, data technologies, and novel statistical methods. The papers in the section will benefit readers who want to use efficient and pedagogically sound python and R code, for example, and who want guidance on how and why the code was written as it was so they can learn from and build on it. Other papers in this section might explore new technologies, approaches, techniques, activities, courses, or units added to existing courses.

Two longstanding sections of the journal—Dataset and Stories and Research on K–12 Statistics Education—will continue to focus on curricular reform and innovative methods of instruction.

For the past few years, *JSE* has been tracking views of articles. There is a strong association between number of views and whether a paper has an immediate impact. The evidence suggests many readers scan *JSE* with a preference for articles that look like they contain material a STAT 101 or 102 teacher could use to make an immediate change in their class, particularly one that might fit into one class meeting. Articles of all kinds are welcome, however, including those that help shape the future of statistics education.

JSE is free, appearing electronically three times per year. All manuscript submissions should be sent electronically via the ScholarOne Manuscripts portal at mc.manuscriptcentral.com/UJSE. ■



Board of Elections Calls for Nominations

Nominations are being sought for ASA president-elect and vice president candidates for the 2020 election year. Yes, the 2019 elections have yet to be held, but the Committee on Nominations needs time to evaluate recommendations in order to propose the best possible slate of candidates for these critical positions.

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

For this election cycle, the president-elect and vice president will be selected from industry. Think about your colleagues and associates who are members of the ASA and would make good candidates for these positions. Think about members who have helped run a conference or are active in your section or chapter. Then, nominate your choices for the 2021 president-elect and vice president by emailing elections@amstat.org.

Supply as much information about your nominee as possible to assist the committee in researching each candidate thoroughly and discretely.

The deadline for nominations is February 1, 2019.

NISS-Merck-HPSS Meet-Up Focuses on RWD

Anirban Basu, professor of health economics and Stergachis Family Endowed Director, The Comparative Health Outcomes, Policy, and Economics (CHOICE) Institute, University of Washington

Douglas Faries, senior research fellow, Eli Lilly & Company

Dan Holder, executive director, preclinical biostatistics, Merck & Co., Inc.

Kelly H. Zou, senior director and Methods & Algorithms Group lead, Global Real-World Evidence Center of Excellence

Big data, real-world data (RWD), and observational data have become ubiquitous and essential components of the drug development and commercialization process. Researchers, statisticians, and data scientists must generate evidence and gain insights from these massive data. Various types of RWD—such as claims, electronic health records, surveys, and digital data—provide opportunities for successful partnerships between academia and business, industry, and government organizations.

This is why RWD and its applications in the pharmaceutical industry was the topic of the fourth virtual meet-up sponsored by the National Institute of Statistical Sciences (NISS) and Merck and co-sponsored by the ASA's Health Policy Statistics Section (HPSS) for the first time this year.

RCT vs. RWE

Randomized controlled trials (RCTs) have long been the gold standard for providing evidence to support the safety and efficacy of a new drug, vaccine, or biologic. Most pre-marketing product development programs are divided into three phases (phases 1, 2, and 3), with phase 3 consisting of large RCTs to confirm the safety and efficacy of a new molecular entity. However, complete reliance on RCTs comes at a price, as they are often not only costly but limited to specific clinical circumstances that generate biases in RCT results with respect to population averages.

On the other hand, RWD are collected from a more heterogeneous population, often in a less rigorous and observational manner, and do not provide the same assurances against biases due to confounding. Nonetheless, RWD have the potential to provide rich, diverse, and important information on compound performance in more realistic clinical settings.

This meet-up focused on the roles RWD can play in compound development, registration, and post-approval, which is an area of highly active research with ongoing debates.

Disruptive Innovation

The presenters highlighted the opportunities to embrace and meet the challenge arising from Real World Evidence (RWE) and their related disciplines and applications. Anirban Basu's presentation suggested

disruptive innovation is needed in not only how evidence is used, but also in how it is produced. He explained the merits of replacing the evidence production infrastructure based on the current drug development regulatory paradigm with an alternative structure termed only-in research (OIR). In the OIR framework, sponsors would produce evidence of safety through phase II in the conventional way. However, much of the safety and efficacy information currently obtained from phase 3 RCTs would be produced by RWE generated by OIR randomized market access to the compound. Final regulatory approval would be based on the evidence generated from the OIR phase.

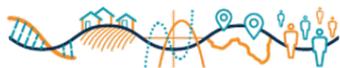
Douglas Faries discussed best practices and innovations using RWE within the existing drug development paradigm. He argued we should endeavor to improve the operating characteristics of RWE to the point where it can support reliable and valid decision-making that is acceptable to regulatory decision-makers. He elucidated some of the most important issues—including repeatability, bias, and unmeasured confounding—and gave insight into how they could be addressed to solidify RWD's evidentiary foundation.

Commenting on the presentations, Kelly Zou noted many of the issues discussed were also topics at the recent Duke-Margolis Conference on RWE. She explained how infrastructure disruption is the key to Basu's notion of an alternative development pathway, while Faries focused on innovative ideas to address the statistical challenges of RWD and how well these results agree with RCTs. Her final takeaway was that although there could be infrastructure disruptions, quantitative skills and statistical thinking remain important.

Skill Sets to Leverage RWE for Decision-Making

Several years ago, *Forbes* published a short history of data science (DS), starting from John Tukey back in the 60s. According to the ASA's statement on DS, it is an emerging and broad discipline with the following three areas as its foundation:

- Database management to enable transformation, conglomeration, and organization of data resources



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MORE INFO?

ms-biostatistics@case.edu

- Statistics and machine learning to convert data into knowledge
- Distributed and parallel systems for providing the computational infrastructure to carry out data analysis

Thus, skills involving data access, integration, and interoperability are of growing importance.

For researchers to leverage RWD, innovative ideas; strong methodological training; and hands-on applications using database and analytic software tools such as Python, SQL, Hadoop, Spark, Hive, and Tableau (in addition to more traditional software coding choices such as SAS, R, SPSS, Stata, Matlab) are useful. Technical skills must be supplemented with interpersonal / communication skills—often using visualization methods to aid in interpretation of the complex data and analytics. Perhaps even more salient in this new world of data exuberance is some grounding in decision theory, to understand the applicability of a piece of evidence to real-world decision-making. Furthermore, analyses of RWD are relying more on sophisticated methods such as complex bias adjustments, advanced modeling, and machine learning techniques. Despite the new sources of data and new skills needed to handle big data, the foundational statistical skills—including research design, pre-specification, multiplicity, missing data, understanding bias, and uncertainty—still remain a critical skill set for RWD researchers.

Virtual Meet-Ups

This NISS-Merck-HPSS joint virtual meet-up was part of a roughly quarterly series hosted by NISS and Merck on emerging issues of interest to the pharma/biostatistics community. Previous meet-up topics include multiple endpoints in clinical trials, estimands and sensitivity analysis in clinical trials, and applications of machine learning in the pharmaceutical industry.

The format is usually two short talks by two invited speakers, followed by a panel discussion initiated by comments from a moderator and questions submitted from the audience. The meet-up lasts one hour and 15 minutes and a recorded version with presentation slides are shared on the NISS website (www.niss.org). Connection information is made available on the NISS website (Upcoming Events section) and through advertisements on the ASA Connect and Biopharmaceutical Section bulletin boards.

The next meet-up, which will focus on statistical challenges in immuno-oncology, is scheduled for January 22, from 11:00 a.m. to 12:15 p.m. ET. ■

EDITOR'S NOTE

The participants are employees of their respective organizations. Views and opinions expressed in the meet-up and this article are the participants' and do not necessarily reflect those of their employers.

A SAMSI Update

David Banks, SAMSI Director

The Statistical and Applied Mathematical Sciences Institute (SAMSI) is one of six mathematics institutes supported by the National Science Foundation and the only one with a special responsibility for statistics. Next year, SAMSI is up for renewal in an open competition that will include all previous and current institutes, plus newcomers. It will be arduous.



This challenge has led SAMSI to undertake a number of new initiatives for what I hope will be the next phase of its life. Some of the major changes are the following:

- We shall move away from year-long research programs and toward semester-long programs. SAMSI has been good at starting conversations that eventually lead to papers, books, and valuable software. But collaborative research can take a long time to bear fruit, so it seems best to start many research threads and let them spin out in their own time, rather than trying to force a finish in nine months.
- For the first time, it seems SAMSI has a serious chance to move onto a college campus. The University of North Carolina at Chapel Hill (UNC) wants to house us, and there is an active discussion of ways and means. Parking will be a problem, but we think the academic environment will bring fresh energy and attract more visitors.
- We plan to grow. Several other universities besides Duke, North Carolina State University, and UNC are exploring the possibility of joining as full partners.

- If SAMSI were being established now, we think data science and machine learning would be part of the intellectual cocktail. For this reason, we are bringing in computer science as a third core discipline, in addition to statistics and applied mathematics, and the overlap in the Venn diagram is what we call data science.

I think it is essential for our profession that at least one of the institutes in the next generation have statistics as a significant focus, so I ask for help from the broad statistical community. Specifically, I hope the following:

- Readers of this update will plan to participate in a SAMSI program. For academics, this means looking ahead to sabbatical years and reaching out to SAMSI to find programs that align with their interests. (SAMSI's reimbursement policy for long-term visitors ensures that participation in a SAMSI program is essentially cost-neutral.)
- Readers who are not academics should consider encouraging their companies to join the new SAMSI Industry Associates program. The price tag is \$10k/year. Government agencies may also join; and will receive similar benefits.

We are in the process of lining up future programs and need strong vision and leadership from the community. If you have an idea for a research program you would like to help lead, please email me at dbanks@samsi.info. All I need to start are three sentences describing the idea and a short (diverse) list of people who would probably be willing to participate, if the timing worked out for them.

SAMSI began in 2002 and has been a fulcrum for the statistical community, enabling us to move the world. I ask for broad community support to ensure SAMSI can continue to empower our field. ■

International Study Program Offers Mathematical Sciences with Dose of Culture



Mathematical Sciences Semesters in Guanajuato is a new international study program at the Guanajuato Mathematics Research Centre in Mexico that combines mathematics, statistics, and computer science with Mexican culture.

Mathematical Sciences Semesters in Guanajuato (MSSG) is an international program open to students with a strong grounding in mathematics who want to increase their knowledge of data science, modeling, and partial differential equations from a comprehensive, forward-looking, and cutting-edge perspective while acquiring a solid theoretical foundation and exploring the rich culture of Mexico.

The program offers two independent semesters: mathematical tools for modeling in the fall and mathematical tools for data science in the spring. There is also a separate summer program in partial differential equations. All three are taught entirely in English.

Students will learn the fundamental theoretical bases of pure mathematics, quantitative methods, statistical models, and computer science, equipping them with the ability to choose relevant and efficient algorithmic solutions for solving problems in data science and mathematical modeling. The summer program combines theory, numerical methods, and applications to mathematical finance.

The program was developed based on the strengths of the Guanajuato Mathematics Research Centre (CIMAT) in pure and applied mathematics, statistics, and computer science and designed with an integrative approach to mathematics with an emphasis on application. In addition, the program offers optional courses in Spanish and Mexican culture while students immerse themselves in the cultural life of Guanajuato.

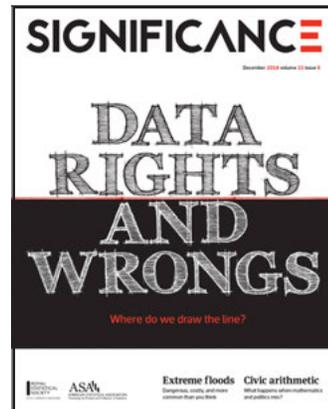
CIMAT is one of Mexico's leading research centers in the fields of mathematics, statistics, and computer science, focusing on enhancing the relationship between these disciplines. With four decades of experience, CIMAT is recognized for its tradition of educational excellence and its contribution to the development of students from Mexico and around the world.

The deadline for applying is April 15 to begin in the fall semester.

For more information and to apply, visit mathsciencesgto.cimat.mx. ■

Significance Highlights: December Issue Covers Thorny Issues

The December 2018 issue of *Significance* is out in digital format. In this issue, we explore the thorny topic of data ethics. Big data is gradually revealing its potential to both help and harm us. But the rights and wrongs of what to do about this are hard to pin down, so Robert Langkjær-Bain looks at the work underway to ensure the data revolution does not leave ethics behind.



Next, we turn our attention to the risk of extreme floods in England and Wales. In past winters, flooding has caused billions of pounds of damage, and though governments, emergency services, and homeowners might like to think—and hope—such extreme events are rare, statisticians have shown they are likely to occur more frequently than expected.

Also in this issue:

- Michael Spagat, Britta Jewell, and Nicholas Jewell explain why President Donald Trump is not alone in mistaking death “estimates” for death “counts.”
- Kingsley Purdam, Elisabeth Garratt, and Graham Whitham dig into the pros and cons of a new UK poverty measure.
- Graham Kendall uses computer simulation to test whether a roulette system can really “break the bank.”
- Blakeley B. McShane and Ulf Böckenholt describe a statistical tool to make behavioral research more replicable.

Access the digital version of *Significance* by logging into Members Only at www.amstat.org or download and read the magazine on the go with our iOS and Android apps. (See bit.ly/2BdoGh3 for instructions.)

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



International Prize in Statistics Awarded to STANFORD'S **BRADLEY EFRON**

The International Prize in Statistics has been awarded to Bradley Efron, professor of statistics and biomedical data science at Stanford University, in recognition of the “bootstrap,” a method he developed in 1977 for assessing the uncertainty of scientific results that has had extraordinary impact across many scientific fields.

With the bootstrap, it is possible to simulate a potentially infinite number of data sets from an original data set and—in looking at the differences—measure the uncertainty of the result from the original data analysis.

Made possible by computing, the bootstrap powered a revolution that placed statistics at the center of

scientific progress. It helped propel statistics beyond techniques that relied on complex mathematical calculations or unreliable approximations, enabling scientists to assess the uncertainty of their results in more realistic and feasible ways.

“Because the bootstrap is easy for a computer to calculate and is applicable in an exceptionally wide range of situations, the method has found use in many fields of science, technology, medicine and public affairs,” says Sir David Cox, inaugural winner of the International Prize in Statistics.

Cornell University and EPAM Systems Inc. examined research databases worldwide and found that, since 1980, the bootstrap (and multiple variations



About Efron

Bradley Efron was born in May 1938 to Russian immigrants and grew up in St. Paul, Minnesota. He credits his salesman father, Miles, for cultivating in him a love of math and science, in part through baseball and bowling scoring. “He kept track of these things,” says Efron, “so I grew up with a lot of numbers around me and that was very helpful—I was training to be a statistician without realizing it.”

He won a national merit scholarship the year it was first introduced and went to Caltech. It was more than an intellectually eye-opening experience. “I’d never seen a mountain or an ocean,” says Efron.

Initially, he thought he was going to become a mathematician, but he realized abstract mathematics was not where his interests or talents lay. Enrolling in a PhD program at Stanford, he switched to statistics. “I remember when going into statistics that first year I thought, ‘This will be pretty easy, I’ve dealt with math and that’s supposed to be hard.’ But statistics was much harder for me at the beginning than any other field. It took years before I felt really comfortable.”

At UC Berkeley, Efron is Max H. Stein Professor of Humanities and Sciences, professor of statistics and professor of biostatistics with the department of biomedical data science in the school of medicine; he serves as co-director of the mathematical and computational sciences program. A recipient of a 2005 National Medal of Science for his contributions to theoretical and applied statistics, especially the bootstrap sampling technique, he was awarded the Guy Medal in Gold by the Royal Statistical Society in 2014. He served in 2004 as president of the American Statistical Association.

on the term such as bootstrapping) has been cited in excess of 200,000 documents in more than 200 journals worldwide. Citations are found in fields such as agricultural research, biochemistry, computer science, engineering, immunology, mathematics, medicine, physics and astronomy, and the social sciences.

“While statistics offers no magic pill for quantitative scientific investigations, the bootstrap is the best statistical pain reliever ever produced,” says Xiao-Li Meng, Whipple V. N. Jones Professor of Statistics at Harvard University. “It has saved countless scientists and researchers the headache of finding a way to assess uncertainty in complex problems by providing a simple and practical way to do so in many seemingly hopeless situations.”

“The bootstrap was a quantum leap in statistical methodology that has enabled researchers to improve the lives of people everywhere,” says Sally Morton, dean of and professor of statistics in the Virginia Tech College of Science. “Efron is a statistical poet of enormous beauty, applicability and impact.”

“The truth is, I didn’t think it was anything wonderful when I did it,” says Efron. “But it was one of those lucky ideas that is better than it seems at first view.” It was a tool many scientists could use, and use easily, especially as personal computing provided the power to do the number crunching. And it worked.

Efron will accept the prize next summer at the 2019 World Statistics Congress in Kuala Lumpur. For more information about the congress, visit www.isi2019.org. ■

MORE ONLINE
Learn more about the International Prize in Statistics at <http://statprize.org>. Visit bit.ly/BradleyEfron to learn more about Efron.



NEW MASTER'S OR DOCTORAL **DATA SCIENCE AND ANALYTICS PROGRAMS** *II*

The proliferation of master's and doctoral programs in data science and analytics continues, seemingly due to the insatiable demand of employers for data scientists. *Amstat News* started reaching out two years ago to those in the statistical community who are involved in such programs to find out more. Given their interdisciplinary nature, we identified programs involving faculty with expertise in different disciplines—including statistics, given its foundational role in data science—to jointly reply to our questions. We have profiled many universities, including a few in last month's issue; here are four more.

- Steve Pierson, ASA Director of Science Policy

CLEMSON UNIVERSITY



Sri Sridharan is a professor of management and serves as the chair of the management faculty at Clemson University. His research area is supply chain management. He has published more than 75 articles in peer-reviewed journals and consulted for various companies and agencies.



Ellen Breazel is a senior lecturer in the Clemson University School of Mathematical and Statistical Sciences. She serves as the manager of the Statistics and Mathematics Consulting Center.

Her professional interests include statistics education and curriculum.

Degree name: Master of Science in Data Science and Analytics

Year in which first students are expected to graduate: Program to begin August 2019; first graduates in December 2020

Number of students currently enrolled: Anticipate 35–40 in first cohort

Partnering departments: School of Mathematical and Statistical Sciences (lead), Department of Management

Program format: 100% online program; 30 credit hours; master's project as part of a course; tracks for both full-time and part-time students

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

The program consists of 10 courses (30 credit hours), five from the school of mathematical and statistical sciences and five from the department of management. The curriculum was developed through collaboration between the two sponsoring departments and a panel of industry representatives. It is designed to combine statistics, mathematics, and management courses to train students to use, manage, and apply data science and analytics in a variety of areas. Fields of application would include marketing, manufacturing, and military fields. The online delivery will help accommodate students in a professional setting looking to advance their careers. There is no prerequisite coursework required; however, some background in quantitative reasoning through coursework or work experience is recommended.

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

In today's world of constant streaming data and quick decisions, Clemson University recognized the need for individuals who are trained in both business management and analytics, including an emphasis in applied statistics. The goal of this program is to create graduates who can use statistical reasoning to help motivate business decisions. Our graduates will be able to bridge the gap between pure data analysts and upper management. Although we have not begun accepting students yet, the program's potential has created interest and excitement among potential students, current faculty, and industry partners.

What types of jobs are you preparing your graduates for?

Graduates of this program will be prepared to be market research analysts, management analysts, or business analysts.

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

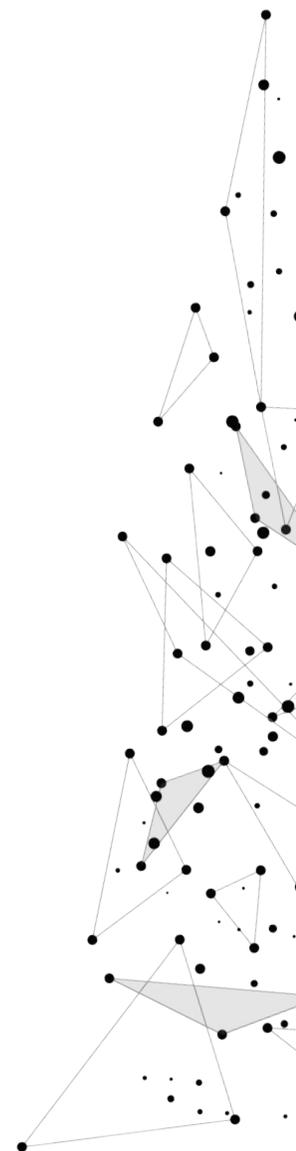
In today's market of constant information, the ability to take ideas from multiple sources to form solutions has never been more accessible or desirable. Students need to have a breadth of knowledge while maintaining an individual expertise. Clemson University's MS in data science and analytics will provide students with knowledge in statistics, mathematics, computer science, and business management. This transdisciplinary approach to learning fosters a breadth of ideas to strengthen the depth of an individual proficiency. A graduate degree in purely computer science, statistics, or business management will provide a depth of knowledge in a field of study, but may not provide the breadth component that has become crucial in today's workplace.

Describe the employer demand for your graduates/students.

IBM predicts demand for data scientists will increase by 28% by 2020 (see bit.ly/2CbdZgI). In the early stages of developing this program, we engaged a panel of industry representatives on curriculum, skills needed, and graduate placement. In tandem with future employers, we have developed a program that will produce in-demand graduates who will have an immediate positive impact.

Do you have any advice for institutions considering the establishment of such a degree?

I would advise institutions considering starting a degree in data science to engage industry partners early and often. It is more effective to form the program based on what your product should be. Interdisciplinary work has become a staple in industry. Those demands on graduates can help foster relationships among departments on campuses.



MASSACHUSETTS INSTITUTE OF TECHNOLOGY



Devavrat Shah is a professor in the department of electrical engineering and computer science at MIT. He is a member of the Laboratory for Information and Decision Systems and director of the Statistics and Data Science Center, both part of the MIT Institute for Data, Systems, and Society. His research focus is on theory of large complex networks, which includes network algorithms, stochastic networks, network information theory, and large-scale statistical inference.



Alexander 'Sasha' Rakhlin is an associate professor in brain and cognitive sciences and at the Institute for Data, Systems, and Society. He is also head of the interdisciplinary doctoral program in statistics with the MIT Statistics and Data Science Center. His research is in machine learning, with an emphasis on statistics and computation.

Degree name: MicroMasters Program in Statistics and Data Science

Year in which first students are expected to graduate: 2019

Number of students currently enrolled: ~31,000

Partnering departments: School of Mathematical and Statistical Sciences (lead), Department of Management

Program format: The MicroMasters Program in Statistics and Data Science is comprised of four online courses and a virtually proctored exam covering foundational knowledge essential to understanding the methods and tools used in data science, including the fundamentals of probability and statistics. It includes hands-on training in data analysis and machine learning. There is no application or admission process, and all the courses are taught by MIT faculty at a similar pace and level of rigor as an on-campus course at MIT. While valuable in its own right, the credential can be applied, for admitted students, toward a PhD in social and engineering systems through the MIT Institute for Data, Systems, and Society or accelerate learners' paths toward a master's degree at other universities around the world.

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

Many organizations now have more data available to them than they know what to do with. Turning this avalanche of data into meaningful business insights creates challenges that require data science skills. One of the defining challenges of our time is how to use data to make accurate predictions that can lead to high-impact decisions. Tackling this challenge means developing the ability to perform data processing and computation on a massive scale. This requires a time investment in ongoing education. We created the MicroMasters Program in Statistics and Data Science because we believe online programs are well-suited to fill this need.

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

We think of 21st century statistics as including classical probability and statistics and encompassing computation and data analysis.

What types of jobs are you preparing your graduates for?

Any role in which analysis of data at scale can be used to empower organizations to derive insights and make data-driven decisions. This means these skills are applicable broadly across industries, as well as in research, government, and nonprofits/NGOs.

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

Students should focus on how to turn data into decisions, which is best taught through multidisciplinary programs that include elements from engineering, mathematical sciences, and the social sciences.

Describe the employer demand for your graduates/students.

The need for professionals skilled in data science, analytics, and machine learning is skyrocketing. We're seeing this across industries and sectors. A recent report from IBM states there will be more than 300,000 new job openings for data-driven professionals by 2020. As it stands now, there is a shortage of the necessary technical skills for these roles.

Degree name: Interdisciplinary Doctoral Program in Statistics

Year in which first students graduated: 2018

Number of students currently enrolled: 5

Program format: The Interdisciplinary PhD in Statistics is designed for students enrolled in a participating MIT doctoral program who wish to develop their understanding of 21st century statistics within their chosen field of study using concepts of computation and data analysis and elements of classical statistics and probability. Participating MIT departments include aeronautics and astronautics; economics; mathematics; political science; and the MIT Institute for Data, Systems, and Society's (IDSS) Social and Engineering Systems (SES) PhD.

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

The most interesting statistical advances are often made in conjunction with various disciplines, and statistics is increasingly an interdisciplinary subject. The reaction from students has been highly positive. We are developing a vibrant group of students and faculty members and growing the footprint of statistics at IDSS and MIT.

What types of jobs are you preparing your graduates for?

Students receive rigorous training in our four focus areas—computation, data analysis, probability, and statistics—along with the work in their home department. This will allow them to achieve domain expertise while effectively using statistical tools and methods. These sorts of graduates will stand out with a unique and specific skill set in either the commercial job market or within academia.

Describe the employer demand for your graduates/students.

The ubiquity and rapid proliferation of data have created unprecedented challenges and opportunities for which statistics is a uniquely powerful tool. Statistics is a key component of data science, and data science skills are in extremely high demand throughout industry and the public sector.

Do you have any advice for institutions considering the establishment of such a degree?

An open and interdisciplinary approach to statistics and data analysis will be increasingly important in the future, and attempts should be made to cross the boundary between disciplines with the rigor of statistics. With this combination, both areas shine brightly.

KENNESAW STATE UNIVERSITY



Herman "Gene" Ray earned his bachelor's and master's in mathematics from Middle Tennessee State University and his PhD in biostatistics from the University of Louisville School of Public Health and Information Sciences.

Degree name: Analytics and Data Science PhD

<http://graduate.kennesaw.edu/datascience>

Year in which first students are expected to graduate: 2019

Number of students currently enrolled: 21

Partnering departments: Statistics, computer science, mathematics

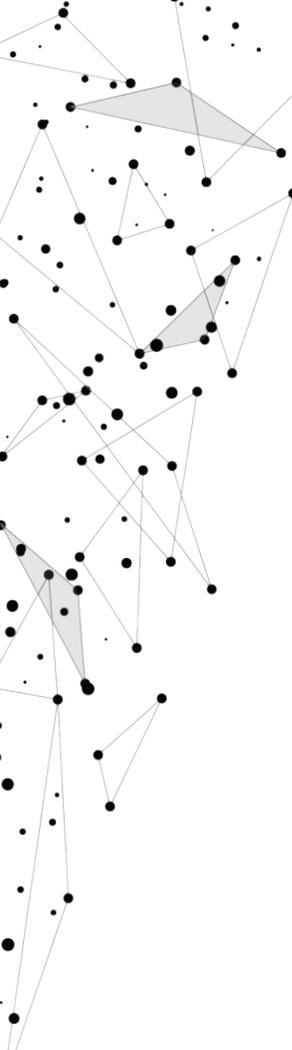
Program format: 78 credit hours, traditional full-time with assistantships and required internships

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

The curriculum contains core courses from computer science, statistics, and mathematics. The mathematics core content includes the theory of linear models, discrete optimization, and graph theory. The computer science core includes machine learning, advanced database systems, and deep learning, while the statistics core includes data mining and applied binary classification. The intent is to train individuals to apply theory to solve complex data-centric challenges.

The program was developed with input from an advisory board comprised of executives and practitioners, as well as academics. Their input directly affected curriculum decisions along with the mixture of courses from the foundational disciplines of data science. It also brought forth the requirement that students experience data science in application.

Within the curriculum, the applied experiences are developed primarily through private sector-sponsored data science research laboratories working on collaboratively developed projects. We currently have approximately 10 sponsored research labs working on image recognition, model evaluation and optimization, structuring, and querying scanned documents. We also engage in "data science for good" initiatives, such as a current project focused on reducing response time for first responders with our local fire department. Summaries of our program's research are available on our website at bit.ly/2EvWjtV.



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

In 2006, Kennesaw State University launched a Master's of Science in Applied Statistics. The program was really an early program in data science—the program requires a foundation in calculus and programming (e.g., SAS, R and Python). In every course, the students work with live data (typically provided by one of our corporate partners) and are required to extract, transport, load, clean, and model. The program is recognized as one of the flagships of the university.

Based on that success, the university administration asked the department of statistics and analytical sciences to develop a PhD program in applied statistics. Given the opportunity to start with a blank piece of paper, we decided to build a program that not only leveraged the successes of the MS in applied statistics, but also integrated the more applied dimensions of computer science. The result was the country's first PhD in analytics and data science, launched in 2015.

The reaction from the market was overwhelming. Our most recent cohort, which began in fall 2018, received 90 applications for five seats.

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

The statistics department at KSU has a strong applied orientation because most of the faculty have industry experience at a variety of organizations, including AT&T, Ford, Thomson Reuters, VISA EU, Accenture, LexisNexis, and MasterCard. Two of the founding faculty leading the analytics and data science PhD program are from the statistics department. The relationship with the statistics department is solid, with a mutual appreciation for the value the two disciplines contribute to each other.

The content taught by statistics is well received by the students, and there are opportunities for students from our program to teach statistics courses as long as they meet the accreditation requirements.

Two of the statistics faculty also act as principal investigators and lead two of the research laboratories with research publications and conference publications resulting from the work.

What types of jobs are you preparing your graduates for?

It is important for PhD programs—particularly those in highly computational disciplines—to appreciate that most graduates will not go into academia. This is a relatively new phenomenon. As a result, PhD programs have a responsibility to ensure they are preparing graduates not just for academic positions, but also to become members of data science organizations in which collaborative teams are the norm.

In our program, the students are preparing for research positions in either industry or academia, with an emphasis in machine learning, data science, artificial intelligence, or positions that require the development of methods to analyze or predict an outcome. They are also learning how to communicate their findings to both scientific and nonscientific audiences.

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

The strongest applications to the program reflected research experiences, including some evidence of publication. The PhD program requires a master's-level degree, but the specific discipline is less important. It is best if the graduate degree is from a quantitative background that also provided research opportunities. The most recent cohort included two individuals with computer science graduate degrees and one with a master's degree in statistics. But we also have students with degrees in anthropology, finance, economics, and mathematics.

While all students interested in pursuing a PhD in data science need to understand the core concepts in statistics and computer science, the best data scientists also exhibit intellectual curiosity, creativity, and strong oral and written communication skills.

Describe the employer demand for your graduates/students?

In a word: "Insatiable." Almost all our PhD students are regularly approached by companies interested in hiring them. For those students interested in going into the private sector after graduation, the dominant fields are finance, health care, and consulting. The academic departments inquiring about our students are primarily housed in colleges of business or in an interdisciplinary research unit like a center or institute.

Do you have any advice for institutions considering the establishment of such a degree?

The biggest issue is coordinating the faculty who mentor the students and teach the courses. They are housed within the specific departments placed within different colleges. For instance, the statistics department is located within the college of science and mathematics, while computer science is located within the college of computing and software engineering.

KSU developed the Analytics and Data Science Institute and housed it within the graduate college to assist with solving this problem. The degree program is interdisciplinary, so this structure allows us to work with faculty who have the required expertise, regardless of the department or college to which they belong. For instance, we have faculty from the Coles College of Business who serve as dissertation chairs since they have the domain knowledge.

The committee is also made up of individuals from statistics and computer science, since they have expertise related to analytics that will be applied to the problem. It has resulted in a great interdisciplinary model, allowing our students to benefit from the expertise located across the campus.

UNIVERSITY OF VIRGINIA



Philip E. Bourne is the Stephenson Chair of Data Science, director of the Data Science Institute, and a professor in the department of biomedical engineering at the University of Virginia.



Jeffrey J. Holt has been a faculty member at UVA for 20 years and has joint appointments in the department of statistics and department of mathematics. He was the first director of the MS in data science program.

Degree name: Master of Science in Data Science
dsi.virginia.edu/degrees/msds-degree

Year in which first students graduated: 2015

Number of students currently enrolled: 49 in the 11-month program and 20 in the two-year dual MBA/MSDS program

Partnering departments: Required courses are offered by the Data Science Institute (DSI, the lead) and departments of computer science, statistics, and systems engineering. Students take elective courses in many other departments, and faculty from other departments participate as capstone project advisers.

Program format: The program is in person and requires 32 credit hours. A capstone project is a central component of the program. Students are full-time, with some entering the program immediately after finishing undergraduate degrees and others entering with post-undergraduate work experience. There is no internship component, but capstone projects involve working with a client so have some elements of a traditional internship. There are no assistantships. An online version of the program will start in the 2019 academic year.

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

Basic Elements: The curriculum is tightly prescribed, with about 70% of the material common to all students. There are core courses in statistical

computing, programming, linear models, foundations of computer science, data mining, machine learning, data ethics, and the practice of data science. All students also work on a capstone project team, with topics that vary but where communication and team science more generally are emphasized.

Program Development: The program was initially developed by a team of faculty associated with the Data Science Institute (DSI) from departments that include computer science, statistics, and systems engineering. Industry input was incorporated into the development and continues through an advisory board.

Prerequisites: Students are required to have an undergraduate degree and have taken courses in single variable calculus (typically a two-semester sequence), linear algebra, introductory statistics, and introductory programming.

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

In 2013, there was an initiative at UVA to address the challenges of big data. This resulted in the establishment of the DSI, together with discussions about how to support research and education. At that time, a small number of colleges and universities had just started programs in data science. It was clear to us that interest in data science was growing among potential students and employers, so it seemed like a good time to start a program.

Student reaction to the MSDS program has been overwhelmingly positive. Employment placement rates have been high (see at.virginia.edu/2Lflj9n), and students report positive experiences in the program. Of course, not everything is perfect and students have provided valuable input that has resulted in program improvements. We are starting to apply data science methods to our own employment data on the four prior years of the program.

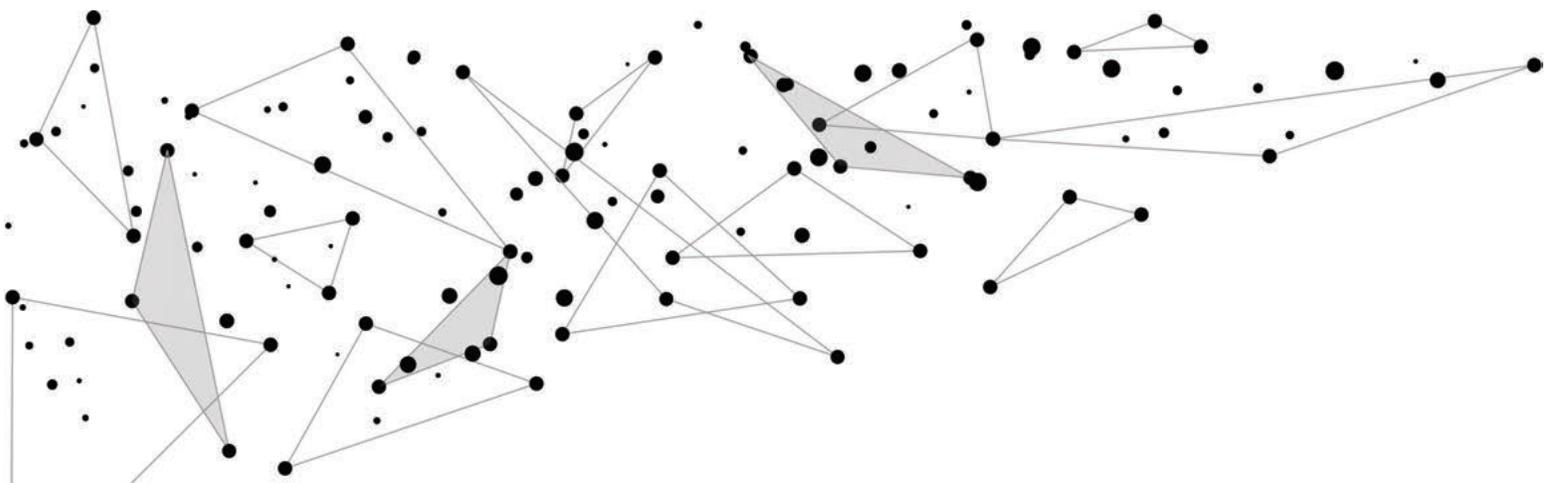
How do you view the relationship between statistics and data science/analytics?

This is hard to answer, because everyone has a different notion of what constitutes "data science." There is a significant overlap between statistics and data science, but we see data science as a combination of statistics, computer science, and programming that encompasses the entire process of transforming data into knowledge.

What types of jobs are you preparing your graduates for?

Graduates have taken jobs in a variety of sectors, including consulting, finance, government, health care, information technology, government contracting (in part due to our proximity to Washington, DC), and even sports analytics. Many are hired into data science groups within larger organizations. Job titles include data scientist, data analyst, senior associate data scientist, director of data science, modeling and simulation specialist, and machine learning engineer.





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

Data science positions typically include significant portions of both computational and data analysis work, so students going into data science should enjoy both aspects. If a student likes analysis but not coding, then statistics might be a better choice, although most statisticians end up doing a lot of data cleaning so some coding is probably inevitable. If students like to code but are not as interested in data analysis, then computer science is likely a better choice. Ideally, students will take enough courses with heavy components of computation and data analysis to be able to assess their interests. It also goes without saying that students entering data science should be excited about the application field they are working within.

Describe the employer demand for your graduates/students.

Demand has been strong. Class of 2018 data is still being compiled, but among the 91% of students in the class of 2017 reporting their employment status, all had found employment, with 93% of US students and 100% of international students working full-time. Average starting salaries exceeded \$91,500, with an average signing bonus of more than \$11,750. Many students had more than one offer, and it is not unusual for students to take a position with the organization that sponsored their capstone project.

Do you have any advice for institutions considering the establishment of such a degree?

We think the ability of the DSI to award its own degrees, independent of any school, is critical to defining the value of data science within our academic system. At the same time, it does not exist in isolation. Our program includes dedicated courses taught in a variety of departments. The advantage to this approach is that different perspectives contribute to the program, which we believe is valuable and fits the interdisciplinary nature of data science. However, faculty scattered across different departments brings greater communication challenges than for programs housed within a single department. Good communication is critical for program consistency and buy-in of faculty contributors and requires ongoing effort to maintain.

Programs should not to skimp on administrative support, especially related to admissions and career services. We received nearly 600 admission applications last year, and many students will reach out with questions that need timely responses. Student employment placement is vital to the success of our program, so we invest heavily in career services. This is not something that will take care of itself.

We also believe creating a diverse, accessible, and open environment to be important and consider it in all aspects of what we do (e.g., admissions, hiring of team members [we do not distinguish faculty and staff], accessibility of our research products). ■

Lifetime Data Science (LiDS) Is Newest ASA Section

On the Horizon: Conference on Lifetime Data Science: Foundations and Frontiers

The ASA Section on Lifetime Data Science (LiDS) is the latest to be voted in by the Council of Sections. The objective of the section is to promote and support the development, application, and appropriate use of statistical methods for the design and analysis of studies of life history processes. This includes supporting the development of new methods, identifying new areas of application, and fostering interdisciplinary research in areas such as biomedicine, finance, economics, imaging, engineering, genomics, and genetics. In pursuing these objectives, the LiDS executive committee and membership will work closely with other ASA sections.

The inaugural chair of the Lifetime Data Analysis Interest Group (LiDA-IG)—the name of the group prior to becoming a section—was Ross Prentice (2014). He was succeeded by Mei-Ling Ting Lee (2015), Jack Kalbfleisch (2016), and Mei-Cheng Wang (2017). Through their leadership, the interest group quickly became active in sponsoring events such as the 2017 ICSA China Conference in Jilin City, China; the 2018 Workshop in Biostatistics and Bioinformatics in Atlanta, Georgia; the 2018 ICSA China Conference in Qingdao, China; and the 2018 International Workshop on the Statistical Analysis of Multi-Outcome Data in St. Louis, Missouri. The scientific committee of the inaugural conference of the LiDA-IG, “Lifetime Data Science: Data Science, Precision Medicine, and Risk Analysis with Lifetime Data,” was chaired by Mei-Cheng Wang and Jack Kalbfleisch and hosted by the University of Connecticut.

Lifetime Data Science Conference

The enthusiasm for LiDA-IG soon led to a membership of more than 230 individuals, which was instrumental in receiving section approval. To celebrate this achievement, LiDS is organizing a conference, “Lifetime Data Science: Foundations and Frontiers,” to be held at the University of Pittsburgh from May 29–31, 2019.

Conference Committee Members

Scientific Program Committee

Richard Cook, University of Waterloo

Jianwen Cai, The University of North Carolina

Local Arrangements Committee

Ying Ding, University of Pittsburgh

Yu Cheng, University of Pittsburgh

The conference will begin with short courses taught by leading experts on May 29, including the following:

- Two Phase Studies for Lifetime Data, by Ornulf Borgan and Sven Ove Samuelsen (University of Oslo, Norway)
- Dynamic Prediction in Survival Analysis, by Hein Putter (Leiden University Medical Centre, The Netherlands)
- Biased Sampling, Left Truncation, and Survival Analysis, by Jing Qin (NIH/NIAID)

May 30–31 will feature invited speaker sessions on topics including survival analysis, joint modeling, competing risks and multistate models, recurrent event analysis, prediction, causal inference in life history analyses, measurement error, and missing data. There will also be three keynote addresses given by internationally renowned statisticians Odd Aalen of the University of Oslo, Danyu Lin of The University of North Carolina at Chapel Hill, and Ross Prentice of the Fred Hutchinson Cancer Research Center. A conference banquet will be held May 30.

There will also be a poster competition and student paper competition. Guoqing Diao of George Mason University is chair of the student paper competition committee. Information about how to apply is available at lids2019.pitt.edu.

For more information about LiDS, visit their website at community.amstat.org/lids/home. ■



To Join or Not to Join A(nother) Section or Interest Group?

2018 ASA Council of Sections Governing Board Members

If you are a history buff, you probably already know when ASA sections were created (and that there is a History of Statistics Interest Group). According to “History of the ASA,” sections were created following WWII to “focus on specific business interests such as engineering, economics, social sciences, and education.” (See bit.ly/2S6FrBX). Today, ASA sections are still doing what they were chartered to do, but with an expansion of topics and interests.

Unlike sections, however, interest groups are relatively new to the ASA. They focus on topics as sections do, but there are important differences. Table 1 provides a detailed comparison of the two.

There are currently 29 sections and nine interest groups. Does the number 29 surprise you? Did you think there were only 28 sections? There were only 28 sections until recently, when our newest section—the Lifetime Data Science (LiDS) Section

(formerly the Lifetime Data Analysis Interest Group)—was established. The Council of Sections recently approved its petition to become a section. (See more on Page 21.)

Now that you are familiar with sections and interest groups, let’s go back to the original question. Should you join a section or interest group? There are many reasons—keeping up to date, networking, advocacy, education, leadership, member awards, etc.—and there are articles that have been published in *Amstat News* about the benefits (August 2016, “Benefits of ASA Section Membership”). Rather than repeat those ideas here, we thought we would show you the data from the 2017 Council of Sections Annual Report to help you decide which sections and interest groups would be valuable to you.

For many years, sections have been asked to create an annual report. In 2017, the report was

Sections	Interest Groups
<ul style="list-style-type: none"> • Membership restricted to ASA Members • Dues are collected by ASA • Money is held in ASA accounts • COS representation via section representatives, who may vote • Formal recognition at JSM of an outstanding section volunteer • Membership rosters maintained by ASA • Officer elections handled by ASA • Invited sessions at JSM <ol style="list-style-type: none"> 1. Allocated invited sessions 2. May compete for additional sessions • Topic-Contributed Sessions at JSM <ol style="list-style-type: none"> 1. Allocated TC sessions 2. May compete for additional sessions • Meeting space at JSM • ASA-supported web presence • Submit articles to <i>Amstat News</i> • Other ASA support may be available by contacting Rick Peterson at rick@amstat.org 	<ul style="list-style-type: none"> • Membership is open to non-ASA members (chair must be ASA member) • Dues are not collected by the ASA • Money is not held in ASA accounts (must arrange for your own bank account) • Interest groups may access up to \$1,000 per year from the ASA • COS representation by the chair, who may not vote • Not eligible for formal recognition at JSM of an outstanding interest group volunteer • Membership rosters not maintained by the ASA • Officer elections not run by the ASA • Invited sessions at JSM <ol style="list-style-type: none"> 1. No allocation 2. Must compete for sessions • Topic-Contributed sessions at JSM <ol style="list-style-type: none"> 1. Allocated one TC session 2. May compete for additional sessions • Meeting space at JSM • ASA-supported web presence • Submit articles to <i>Amstat News</i> • Other ASA support may be available by contacting Rick Peterson at rick@amstat.org

Table 1—
A Comparison
of Sections and
Interest Groups

	Sections																				Interest Groups								
	Bayesian	Biometrics	Biopharmaceutical	Business & Economics	Defense & National Security	Environment	Epidemiology	Government	Health Policy	Marketing	Medical Devices & Diagnostics	Mental Health	Nonparametric	Physical & Engineering Sciences	Programmers and Analysts	Quality & Productivity	Risk Analysis	Social Statistics	Sports	Statistical Consulting	Statistical Education	Statistical Graphics	Survey Research	Teaching in Health Sciences	Lifetime Data Analysis	Business Schools	Astrostatistics	Uncertainty Quantification	
Communication Activities																													
Exec Board Communicate via Community																													
Member Communication via Community																													
Section Website																													
Solicit Member Feedback																													
Publish Newsletter																													
Submit AmStat News Article																													
Welcome New Members																													
Meeting & Networking Activities																													
Member Mixer																													
Networking Activities																													
Roundtables at Conferences																													
Sponsor JSM Sessions																													
Sponsor Non-ASA Conferences																													
Recognition and Awards																													
Student Awards																													
Fellow Nominations																													
Member Awards																													
Volunteer Recognition																													
Support Young Statisticians																													
Sponsor Travel Grants																													
Student Outreach																													
Continuing Education & Activities																													
Continuing Education																													
Webinars																													
Leadership & Mentoring Activities																													
Leadership/Career Development Workshops																													
Mentoring Program																													
Outreach Activities																													
Cross-Section Activities																													
Member Recruitment Activities																													
Public Relations Activities																													

Figure 1: Results from the 2017 Council of Sections Annual Report, indicating the self-reporting from the participating section and interest group on their activities.



MORE ONLINE

Read more about the benefits of ASA section membership in the Council of Sections Governing Board article at bit.ly/2zZvjnq.

Interest groups are similar to sections in that they are formed based on a particular statistical theory, methodology, or application that is sufficiently broad to represent active professional interests within the scope of the ASA. In fact, sections must start as an interest group, and then they may choose to petition to become a section after three years.

modified and a simple, short questionnaire was created. Sections and interest groups were asked to update their three promotional bullets included in the informational slides on sections and report on their activities. The full report is available at <https://community.amstat.org/councilofsections/home>.

The cell plot (Figure 1) shows the activities of the sections and interest groups that responded to our questionnaire. (Four sections and four interest groups did not reply.) The rows of the cell plot describe the activities a section might support, and the columns list the sections and interest groups that sent their annual report. A grey cell means the section or interest group on that column participated in the activity listed on that row.

This report offers an overview of the activities, identified areas of strength, and identified areas to develop to the COS. It also gives section and interest group leaders a way to see what others are doing and who they might talk to if they are interested in starting an initiative. (For example, many sections seem interested in either starting or improving their mentoring program. If this is something of interest to you and you haven't seen the special edition of *The American Statistician* that focuses on mentoring (February 2017), it is worth taking a look.) The

feedback we have received about the annual report has been positive, and it is something we will do again in 2018.

There are a few other activities that might be of interest to you as you make your decision about whether to join or become more involved in a section or interest group. At JSM 2018, the COSGB sponsored a workshop that focused on leadership skills for executive members of sections and interest groups, and we plan to continue offering these leadership workshops. Also, in 2019, we will start a volunteer recognition award for sections. Once every three years, on a rotating basis, a section will be able to recognize a section member for outstanding volunteer service.

If you still aren't sure about joining a section or interest group, let us motivate you a bit more. It's *free!* Well, you have the option to try out a new section for a year for free, and then dues range from \$5 to \$12 annually. It is a great value, and you are helping to advance the profession.

If you have any questions about the activities of the Council of Sections, feel free to contact anyone on the Council of Sections Governing Board (see ww2.amstat.org/committees/commdetails.cfm?txtComm=COSGB). ■

PASTIMES

What Does Doug Tyson Like to Do When He Is Not Being a Statistician?

Who are you, and what is your statistics position?

I am Doug Tyson and I teach statistics at Central York High School. Although I began my teaching career as a mathematics teacher, I love teaching statistics. My full teaching schedule consists of statistics courses, including AP Statistics, non-AP Statistics, and Statistical Reasoning in Sports. I am happy to be an ASA member and currently serve on the ASA/NCTM Joint Committee on Curriculum in Statistics and Probability.

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

I like to hunt, fish, and read, but one of my more unusual hobbies is making snow. My brother-in-law got me interested in making snow. I use a manifold to force water out of two pressure washer nozzles and a water/air mixture out of the third and lowest nozzle. The mixture that comes out of the lower nozzle freezes almost instantly under the right atmospheric conditions. Then the water droplets from the two higher nozzles fall through that frozen mixture, forming larger “flakes.”



Homemade snow in Doug Tyson's yard

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

I was drawn to snow-making out of my desire for world domination. If I can control the weather, I think I stand a good chance of controlling the world. My first preference is to plunge the world into eternal autumn because of the lovely colors and crisp weather. However, I have not perfected this technique, so eternal winter is my backup plan. ☺ Additionally, it's fun to host sledding parties when the rest of the neighborhood doesn't have any snow at all. If you look closely at the picture, you'll see there is green grass all around the big pile of snow in my yard. ■



Tyson



STATS4GOOD

Data for Good: The Year in Review



With a PhD in statistical astrophysics, David Corliss leads a data science team at Fiat Chrysler. He serves on the steering committee for the Conference on Statistical Practice and is the founder of Peace-Work, a volunteer cooperative of statisticians and data scientists providing analytic support for charitable groups and applying statistical methods in issue-driven advocacy.

As we turn over the calendar, it is important to take time to reflect on the past and consider where we are going. 2018 was an amazing year, marked by rapidly growing numbers of Data for Good projects, volunteers, and opportunities. Data for Good in the news.

2018 was a landmark year during which the D4G community both grew and drew closer together, coalescing into a stronger, more vibrant, and more distinct movement. Statisticians have always done D4G—I like to point to the example of Florence Nightingale in the 1850s as one early example. Yet, in the past year, the D4G community has gained a more distinct character. We are seeing many more organizations, projects, positions, conferences, and conference sections distinctly labeled as D4G. With this increased visibility has come more opportunities, supported by more and better networking and communication between D4G practitioners.

We are now amid a sea change in which D4G activities are becoming an explicit part of many programs—and careers! It is my own hope and goal

that D4G becomes *normative*, an ordinary part of almost any analytic career—in the same manner pro bono work is for other professions. The past 12 months have seen D4G gain a clearer, more distinct identity within the larger analytic world.

Organizationally, the new Leadership Institute, an initiative of ASA Past President Lisa LaVange, offers training and professional growth opportunities that may affect the D4G space most of all. Also, on the news front, Statistics Without Borders (SWB) has a new charter, fostering a closer relationship with the ASA. You can learn more about SWB on their website at bit.ly/StatsWB.

The Joint Statistical Meetings saw many presentations and sessions with clear D4G themes. These highlighted both the work and the ever-advancing technology used by D4G practitioners to help people and to build better communities and a better world. The Karl E. Peace Award for Outstanding Statistical Contributions for the Betterment of Society was awarded to Patrick Ball of the Human Right Data Analysis Group (HRDAG) for pioneering work in

human rights violations (bit.ly/2Gh6SHA). Ball's work has become an inspiration and guide for many, including me.

One of the most important developments of the past year has been the growth in the number and impact of D4G hackathons. There is now a steady stream of events to be found through internet searches. In many cases, hackathons combine in-person and virtual volunteers via streaming, removing the requirement to be physically located where the hackathon is headquartered. Another big area of growth in 2018, often going hand-in-hand with hackathons, are student groups. Rather than trying to start new student groups in D4G, which can be challenging, the most success has been found by working with existing student organizations already doing good and adding the dimension of statistics and data science to their work. This valuable lesson was learned by partnering with the important work of Russ Lavery at Drexel. By adding this science and technology to existing groups—with their existing infrastructure, leadership, and university approvals—more students are finding a fast track to making an even greater impact with statistics and data science.

With the successes in 2018, there have been challenges as well. The D4G community is starting to experience growing pains, with more willing and interested volunteers than well-organized projects to enable their outstanding scientific skills and interest. Addressing this issue will be a subject of future columns—stay tuned!

Another concern in 2018 has been the viability of government data resources in the United States in an administration not always amenable to unfettered scientific discourse. Several D4G data rescue researchers engaged in “data rescue,” archiving public data sources should access be restricted in the future—a concern and practice time has proven well-founded.

Of course, the D4G community is not free from any of the issues that affect the analytic community. The concerns about reproducibility, use—and misuse!—of p -values, bias, and other questions of statistical reliability are important for everyone. However, they are especially critical in D4G research, partly because so much is at stake and partly because our work on questions of social good has great potential to become politicized and even opposed for reasons other than statistical quality. The ASA has rightly

Get Involved

While speaking at a wonderful conference—Young Bayesians and Big Data for Social Good from CIRM at Aix Marseilles University—I met a remarkable PhD student, Matthew Rushworth, who is working on a great D4G project addressing a critical environmental concern. Virtual Reef is a citizen scientist project collecting divers' images of Australia's Great Barrier Reef. These crowd-sourced images are analyzed to monitor and predict coral coverage. You can visit the Virtual Reef and contribute images at www.virtualreef.org.au.

Another great opportunity coming up is a one-day conference April 5, Data Science for Social Good, at the Boston Museum of Science (bit.ly/DSSGBoston). I hope to see many of you there!

taken a lead in addressing these issues, and it must continue. All statistical work benefits from proper care and rigor, with D4G perhaps most of all. Our high calling demands we practice the highest standards of reliability and reproducibility, lest any incautious work become an ore from which denial is refined.

Of course, one new happening in the D4G community in the past year is this column. I hope and trust it has reflected all the rest—the success stories, volunteers and their good work, the emerging technology, and much more. What started as an invitation from Mary Kwasny to write a guest column in a late 2017 issue became a concept proposal and then this column, hopefully as a vehicle for supporting D4G projects.

The American Statistical Association—its officers and members and the *Amstat News* staff—all have worked together to make this vision a reality. The unsung hero in all of this is Megan Murphy—our editor—whose hard work, skill, patience, and sound advice has nurtured this concept and helped bring it to blossom. Anyone who has benefitted at all from this column owes her a deep debt of gratitude, one I can never repay.

The most important role in all of this has been you, the readers! Your support, comments, ideas for columns, and sharing with your colleagues turned this idea into a reality. As we go forward into the challenges and successes for another year, your support will continue to be the strength and light leading the way. ■

STATtr@k

From Graduate Student to Assistant Professor



Jaime Lynn Speiser is an assistant professor at Wake Forest University School of Medicine in the Department of Biostatistical Sciences. She earned her PhD in biostatistics at the Medical University of South Carolina, MS in statistics at The Ohio State University, and BS in mathematics at Elon University.

Transitioning into your first faculty job as an assistant professor may seem daunting, but the process can be easier with proper preparation. This includes strategic planning during graduate school, professional development, and choosing the right position for you. Then, arriving at a new job, being intentional about how you spend your time is imperative. I am not an expert on any of this, but I recently went through the process. The transition from graduate student to faculty is probably going to be different for everyone, but I hope to share some insight about my experience.

While in Graduate School

As a graduate student, there are many ways you can prepare for your future as a professor, if that is what you are interested in. I always knew I wanted to be an academic, so I pursued activities that would look desirable for a future university employer and provide exceptional work experience. For example, I volunteered on departmental and college service committees. Additionally, I applied for my own funding, which was a great way for me to learn about the process of writing and successfully obtaining a grant.

Before I began interviewing for academic positions, I wrote the next grant I was planning to submit. This was a benefit for me not only at the job application phase, but also when I began my position. I had a grant I immediately submitted (which was successful!). I understand graduate

students have limited time, but I would encourage students to strategically go above what is expected of them as part of the program requirements. This will set you up for success in your job as an assistant professor.

Involvement as a Student Member of ASA

In conjunction with additional academic activities, I pursued many career development activities as a graduate student. Being a student member of the ASA was invaluable for accessing these activities.

Attending national and local conferences was beneficial for me in developing my professional network. I joined the South Carolina Chapter, which was a great way to connect with other academics and students in my area. I have found that our field has many wise professionals who are happy to give advice.

I applied for several student travel awards for meetings, which not only provided me funding to attend those conferences, but also looked good on my résumé. Additionally, the ASA's JobWeb was a useful tool for finding jobs, as well as for understanding what salary to expect for different types of jobs.

Overall, the ASA has many resources available to foster professional growth. Taking advantage of these as a graduate student is a great way to differentiate yourself and springboard your career.

Choosing the Right Position

It may seem obvious, but choosing the right position for you will

lead to an easier transition from student to professor. It is highly unlikely you will find the perfect job right out of school, so you will need to prioritize aspects of the position to identify the best job. This is different for everyone. For me, some of my top priorities were a collegial department, a diverse department (age, gender, backgrounds), a department with a strong and accessible department chair, location of the job, and a job where I would likely get tenure. It was also important to be in a department with good people who could serve as faculty mentors as I began my career. My graduate mentors, as well as other faculty members at my graduate school, provided invaluable discussion and advice for me while I was going through the job search process.

Regardless of the type of assistant professor position you want, you should be clear about research, teaching, and service expectations. I was looking for an academic position that balanced time between both teaching and research. Ultimately, I decided to accept a position with a low teaching load and high research expectation. Ahead of interviewing, you should think about what aspects are priorities versus those you would be willing to compromise.

While I was interviewing at various positions, I kept detailed lists to evaluate these factors. After you are offered a position, there is an opportunity for you to negotiate some of the aspects that are important to you, but there is no guarantee you will get everything you ask for. I tried to

negotiate more teaching into my contract, but because my department does not have our own graduate program, this was not feasible. Despite this, I am elated with my decision to accept this job, and my transition into being an assistant professor has been smooth because I chose the right job for me.

Moving to a New Location

Starting a new job in academia usually requires moving to a new location. This is often accompanied by stress from various sources. Moving is stressful; learning a new area is stressful; meeting new people is stressful. Remember to take time for yourself and your mental well-being. Transitioning from graduate school to a new location can be emotionally taxing. I loved the city in which I attended graduate school and had a lot of friends there. After five plus years of graduate school, it can be challenging to start over in a new place. I have been at my faculty job for about a year now, and it is finally starting to feel like home. Be patient with yourself during these major life changes!

Starting as an Assistant Professor

After years of preparing for this as a graduate student and settling into a new location, it is finally time to start working as an assistant professor. The way I see it, I do the same work, but I have a better office now (with a window!). In no order, my thoughts and advice about starting the job include the following.

1. Jump in! Say “yes” to as much as you can right when you start. Whether this is teaching, mentoring, or researching, getting involved in projects will get your career going. For me, this

included submitting a career development grant, joining departmental committees, co-mentoring a graduate student, attending career development sessions hosted by my university, and collaborating with researchers in a different department. Whatever the expectations of your job as an assistant professor, I would encourage you to get involved as soon as you can.

2. Meet with as many people as you can to develop collaborations and get advice about how to be successful in your job. I recommend meeting with people inside and outside of your department, so you have a broad idea of projects across the university.
3. Find a formal mentoring committee. I had input about who was on my committee, but my department chair facilitated this. I meet with the committee twice a year to discuss progress to tenure and career development. They helped me connect with researchers across the university when I started my job.
4. Figure out who can help you with administrative tasks (e.g., ordering new business cards, securing a conference room, and spending your start-up funds). Staff members in the department are extremely helpful!
5. Remember you are in demand and collaborative researchers need your input for projects. I mainly work with medical researchers who, on average, are about 30 years older than me and have lots of experience in their clinical fields. No matter how young or inexperienced you

may think you are, be confident in yourself and what you bring to the table.

6. Attending new faculty events and faculty development activities is a good way to meet people who are potential collaborators and friends.
7. You have a real salary now, but don't go too crazy after you get your first paycheck. I like to splurge on small things that are important to me and make me happy, but generally have kept a similar lifestyle to when I was in graduate school.

Hushing the Doubt

Across all levels of academia, many people have the imposter syndrome. I have often wondered, “Am I smart enough for this job? What if I tell someone the wrong answer? Do I deserve this job? Why is it that the more I know, the more I realize I do not know?” I think it is natural to have doubts about yourself, especially when you begin your first faculty job. Though I am not sure the doubt will ever completely go away, I try to remind myself that I am smart, that I worked vigorously to get to this position, and that I am worthy.

Sometimes when I think about how happy and fulfilled I am in my job as an assistant professor, the word “luck” comes to mind; however, luck had little to do with it, because I had charted a course as a graduate student and worked tirelessly to get to this position. If you believe in yourself and plan your career path early on, I am sure you will have a successful transition from graduate student to assistant professor. It is not all sunshine and rainbows, but try to enjoy the ride! ■

MASTER'S NOTEBOOK

Making Decisions for a Long, Satisfying Career



Susan Duke works for the FDA/CDER/Office of Biostatistics and is a Biopharmaceutical Section member. She lives in downtown Silver Spring, Maryland, with her two Maine Coon cats, Giada and AngelFire. Her hobbies include social dance, choral singing, and exploring the amazing metropolis and parklands of Washington, DC, with friends.

When I think back to the beginning of my time as a young statistician, which was more than 30 years ago, I often think about how I made the decision to become a statistician. How did my career evolve along the way? What worked, and what didn't? Considering my path, this is what I would wish to know if I were still in school or recently graduated: Find your way to a job that gives you internal meaning and purpose, a job that allows you to be your undivided, whole self.

I use my career as an example here. Your motivations and preferences will be different, so you may want to substitute your own variables for the best effect.

Where to Go to School?

Regardless of the school one attends, what may matter most as an undergraduate are the influential professors, coaches, musical directors, peers, and random people one meets, as well as one's own investment of time and energy—from coursework and scholarship to social connections and community activities.

I'm a first-generation college graduate who was raised in a farming community. Going to a well-pedigreed school wasn't on my radar. I graduated from the University of Wisconsin-Green Bay, a small school where I got to know my professors because of the small class sizes and friendly learning environment.

My degree in biology and concentration in environmental studies were what fascinated me, what I demonstrated a talent for, and what showed promise for a successful career. Two years later, I attended graduate school at Louisiana State University for a master's in marine science and, on the advice of my adviser, went for a second MS in applied statistics.

How to Get That First Job?

Doesn't the rubber meet the road of employability when seeking that first position? I moved to the Bay Area and thought I'd surely find a marine or estuarine-oriented research position; it's a big bay! But those jobs weren't to be found within a reasonable commute of our home in Mountain View. What to do?

It's not easy to consider other options after working hard and long on a degree. However, someone told me about a SAS User's Group meeting, where I met people at Genentech in need of programming and statistics skills. This is when my new adventure in biopharmaceuticals began.

While I missed marine ecology, I loved the science of pharmaceutical research and improved job security. My science background presents different strengths than statisticians with undergraduate backgrounds in math and statistics have. There are times my skill set has presented challenges—such as when methods development and management are the only career pathways. Other times, I've had more opportunities because of my science and ecology background, like now when safety, data interpretation for good decision-making, structured thinking, and bioinformatics are becoming more known and valued in our profession.

What are your strengths and interests? How might they benefit your employer or another? How can you use your agency and insights to benefit them and yourself?

How I Evolved My Career

Self-reflection, feedback from leaders I trust, and keeping an eye out for situations that light me up creates much more joy than following advice that doesn't resonate or the latest trend. What are your passions? Which emails do you open right away? Which projects do you finish early or put more shine on? Even when we don't realize them consciously, these enthusiastic behaviors are guideposts to our internal drivers.

My own journey took me to Seattle next, for a total of 10 years on the West Coast and two years in Colorado. There was much to learn about regulations, endpoints, methods, and understanding the context of these diseases and medicines. Next, I spent 18 years at GSK—first as a respiratory statistician, then as an internal consultant on tools, processes, and standards to benefit statisticians and their customers. This led to developing expertise

in graphic design, serving as business lead for IT deployment of graphics tools, and playing a key role in the development and culture shift of how GSK quantifies benefit-risk across their portfolio.

For a short time, I tried another role that entailed a cross-country move. I realized it wasn't a good fit and considered what to do next. I took advantage of this challenge to self-reflect. What did I learn? Where was my internal compass pointing? Protecting the public good figures heavily into transparency, graphics, and benefit-risk assessment. Where could I put my experience and curiosity to good work? What was my package of assets and interests, and how could this be used to best effect?

I made some inquiries at the US Food and Drug Administration. Happily, they agreed I was a good fit and I started working in the Center for Drug Evaluation and Research's (CDER) Office of Biostatistics earlier this year. Working here is amazing—the science, variety of indications, endpoints and methods, collegiality, and higher purpose of our roles as drug reviewers all make it a fulfilling place to work, both for statisticians fresh out of school and for people like me who are writing a final chapter about a long and fascinating professional journey.

What does a CDER statistics reviewer do? I review investigational new drugs and new drug applications in the pulmonary area of the Division of Biometrics II (DBII), Office of Biostatistics in CDER, along with several colleagues. We pulmonary statisticians meet regularly with our team leader, which encourages consistency. We also present our draft review plans to fellow DBII members, so we get everyone's ideas about what is important to review and how. Knowing the importance of the decisions we are making to patients and sponsors, we put much care, respect, and diligence into our reviews. Fellow reviewers are enthusiastic about helping each other. I've advised some on graphics and benefit-risk and received helpful comments.

I've continued with activities in safety statistics, graphics, and benefit-risk with my colleagues in DBII and with our office's new deputy director of

bioinformatics. People who have worked at FDA for much of their careers have respect for and curiosity about what it is like as an industry statistician. It is understood that both perspectives are valuable. Working at FDA has been a wonderful opportunity to make use of what I have learned over a long career.

Suggested Reading

Give and Take: Why Helping Others Drives Our Success

Adam Grant

Drive

Daniel H. Pink

Quiet: The Power of Introverts in a World That Can't Stop Talking

Susan Cain

The Four Agreements: A Practical Guide to Personal Freedom (A Toltec Wisdom Book)

Don Miguel Ruiz

Tippling Point: How Little Things Can Make a Big Difference

Malcolm Gladwell

Outliers: The Story of Success

Malcolm Gladwell

What Has Made for an Enjoyable Work Life?

What brings me inspiration and fulfillment are those experiences that suit who I am. Surely, that's true for us all? Knowing oneself comes from having experiences and listening to yourself about whether they fit. Find your agency, walk your journey, be aware of those who go out of their way to nourish and support you, and—for goodness sake—support them, too.

Higher Purpose

What's yours? Joy and meaning can be found there. ■

Invited Session Proposals Wanted for ICES VI

Methods and Practices for Statistics on Businesses, Farms, and Institutions

June 15–18, 2020

The Ritz-Carlton, New Orleans, Louisiana

As the sixth in the series of international conferences on establishment statistics, ICES VI is designed to look forward at key issues, methods, and research findings pertaining to establishment statistics. The program committee invites you to submit a proposal for an invited paper session by June 13.



Invited Sessions

There are a limited number of slots for invited sessions. To ensure that all invited sessions are of a consistently high quality, organizers must provide sufficient information to clearly demonstrate the importance of the topic and quality of its contribution. The program committee encourages proposals addressing one or more related topics from various angles, incorporating presenters and perspectives from different countries and organizations.

Invited sessions will last 100 minutes, including floor discussion. The session organizer may choose between the following two formats:

- Two papers (35 minutes each or one longer and one shorter presentation) + discussant (15 minutes) + floor discussions (15 minutes)
- Three papers (25 minutes each) + discussant and floor discussions (25 minutes split among discussant and floor discussion)

Proposal Submission

Session organizers will be asked to submit a proposal that describes the session topic in detail, including the following:

- Names of all session presenters and discussant
- Titles and short descriptions of each presentation

Once you have a sufficient number of committed speakers, you can submit your proposal online until June 13.

Topic-Contributed Sessions

If a proposal is not accepted as an invited session, the organizer can resubmit the proposal as a topic-contributed session with four papers and a discussant. Information about the differences between invited and topic-contributed sessions and their formats is available at bit.ly/ICES2020.

Publication

This conference will feature an edited volume. Presenters in invited sessions are highly encouraged to submit their manuscripts for publication consideration. Presenters might also be contacted by a member of the Publication Committee and invited to consider publishing their paper. All invited session presenters are encouraged to include their manuscripts in the conference proceedings.

For more information about ICES VI, visit bit.ly/ICES2020. ■

Save the Date: Data Institute Annual Conference

This year's Data Institute San Francisco Conference (DSCO19) will take place March 10–12 in San Francisco, California. The goal of the conference is to draw leaders of industry and academia together to explore the latest theoretical advances and technological applications in data science.

The following six tracks will organize the conference:

- Deep Learning
- Design of Experiments
- Data Science in Marketing
- Network Analysis
- Machine Learning and Technology
- Data Science-Accelerants of the Sustainable Development Goals and High Dimensional Signal Processing

This conference is limited to 350 participants. Attendees can expect to learn about the latest advances from an invited group of cutting-edge researchers.

Visit the website at www.sfdatainstitute.org to view the list of speakers and schedule of events and to register. Follow #DSCO19 on Twitter for up-to-date information.

Panel Members Share Career Path with Undergraduates

Seven biostatisticians/statisticians and three graduate students came to Haverford College in Pennsylvania November 3, 2018, to share their career paths, research projects, and overall experiences with local undergraduate students. The panelists came from various pharmaceutical companies, consulting firms, and universities. Six biostatistics and statistics department chairs or graduate program directors also introduced their graduate programs during the event.

Three presentations were given, titled “Life as a Biostatistician/Statistician in Industry,” “Life as a Biostatistician/Statistician in Academia,” and “Graduate Programs in Biostatistics/Statistics.”

Besides giving presentations, panelists also had lunch with participants and answered questions.

The event was sponsored by the ASA’s Biometrics Section and Koshland Integrated Natural Sciences Center of Haverford College. Visit Amstat Online to view photos of the event. ■

James Cochran, professor and associate dean for research at the Culverhouse College of Business, University of Alabama, was recently honored by the Institute for Operations Research and the Management Sciences (INFORMS) with its 2018 President’s Award for his high-impact initiatives that have improved the global education of operations research, analytics, and statistics.

Cochran, a 2014 ASA Founder Award recipient, has led a distinguished career as an educator and researcher for more than 20 years. He developed and leads a teaching effectiveness colloquium series, which introduces teachers in 14 developing nations to state-of-the-art educational methods, including distance learning, collaborative learning, active learning, and project-based learning.

Cochran is also the founding editor-in-chief of the *Wiley Encyclopedia of Operations Research and Management Science*, which is a 6,000+-page reference containing more than 600 articles written by eminent scholars and available online for free in developing nations. The articles published in the encyclopedia are used in classrooms, to address applications, and as reference sources for research articles and literature surveys.

Cochran also served two terms as editor-in-chief of *INFORMS Transactions on Education*, which publishes open-access teaching materials, including cases. During his tenure, teaching materials were provided to instructors from more than 100 countries.



Cochran

The INFORMS President’s Award is to recognize, and thereby encourage, important contributions to the welfare of society by members of our profession at the local, national, or global level. Achievements suitable for this recognition may be in technical or scientific education or in paid or voluntary consulting or management (commercial, academic, governmental, or non-profit). The award is given each year at the national meeting.

For information about the award and INFORMS, visit their website at www.informs.org. You can also watch Cochran’s short talk on YouTube at bit.ly/2EuIGQp. ■

Obituary

Tom Short

On November 18, 2018, Tom Short, the co-editor of *Statistics Education Research Journal (SERJ)* from 2006 to 2009, went missing from near his family’s home in the area outside of Cleveland, Ohio. On December 4, 2018, a body was found, which was later confirmed to be Tom.

Visitation and a service were held December 22 at Messiah Lutheran Church in Lyndhurst, Ohio. The family has requested that donations toward a scholarship in Tom’s name be made in lieu of flowers (bit.ly/2QUjgS7).

Tom was editor of the *Journal of Statistics Education* prior to *SERJ*, and both journals plan to have separate tribute pieces to honor Tom in 2019.

Bay Area Biotech-Pharma Statistics Workshop a Great Venue for Learning, Networking

Jing Huang



From Left: Jing Huang, Ruixiao Lu, Ron Yu, Lisa LaVange, and Kathy Zhang



From Left: Chito Hernandez, Tara Maddala, and Lisa LaVange



From Left: Ying Lu and Liang Fang



From Left: Jeetu Ganju and David Zhang

More than 250 statisticians and their colleagues in related fields gathered in Silicon Valley November 5–6, 2018, to attend the Bay Area Biotech-Pharma Statistics Workshop (BBSW 2018) and discuss cutting-edge statistical methodologies and best practices in the analytical field that will change patient care.

The theme of the workshop was “Innovation and Impact.” The Bay Area is a hotbed for the biotech and pharmaceutical industries, with one of the largest clusters of statisticians. BBSW filled the need for a high-quality statistics conference by bringing the community closer and providing a venue for local statisticians, bioinformaticians, data scientists, and programmers to learn, interact, brainstorm, and network.

The workshop opened with a keynote by Lisa LaVange, 2018 ASA president. Her presentation focused on fostering statistical leaders and increasing their impact through day-to-day work. LaVange touched on her lifelong journey as a statistician working across industry, academia, and government. She shared with the audience important insights about how to be a great leader and encouraged the audience to step up to the plate since statisticians are well-trained

on qualities a great leader should possess such as critical thinking and objectivity.

Following LaVange, Steven Shak—cofounder and CMO/CSO of Genomic Health—gave a talk titled “Technology Innovations in Health Care and Medicine.” He reviewed the recent evolution of breast cancer management and highlighted the importance of precision diagnostic tools to help patients avoid unnecessary treatments. Another focus was the value of productive collaboration across functions—how important it is for clinicians and senior management to listen to statisticians and include them from the inception of a project.

The afternoon program included an invited session on innovative trial design and a panel discussion on recently released ICH and regulatory guidance. During the dinner, Mingxiu Hu, senior vice president at Nektar Therapeutics, gave a banquet speech and shared his thoughts on how statisticians can drive strategic decisions to improve drug development efficiency.

The second day of the workshop began with a session on innovative technology and applications in clinical trials. Speakers in this session touched on how wearable devices and smartphones are actively changing our lifestyle and

the way we collect data. Innovative data analysis and collection methods are even more important for handling such rapid changes.

A second session focused on machine learning and big data applications in drug and diagnostic development. Speakers from Genentech, Google, and Veracyte shared their experiences leveraging big data and the rapid development in machine learning, particularly deep learning, to help improve patient management.

Lunch on the second day included a roundtable discussion in which six experts in their respective fields led informative discussions with their groups. The afternoon invited session revealed successful examples in statistical innovation. Finally, the workshop ended with a panel discussion on innovation, impact, and leadership.

The workshop was hosted by DahShu, a nonprofit organization founded in 2015 to promote research and education in data science. It was cosponsored by industrial and professional organizations, including the ASA Biopharmaceutical Section and San Francisco Bay Area Chapter. More information about the conference can be found at bit.ly/2S1M8oS. ■

Obituary

Herb Spirer

by Patrick Ball

Herbert Spirer, a consultant in statistical science to the Human Rights Data Analysis Group (HRDAG) passed away October 25, 2018. He was 93. Herb supported HRDAG since before it formally existed. With his wife, Louise, Herb mentored almost everyone—or he mentored their mentors—who works in human rights data analysis today. Herb led a generation of statisticians to work in human rights and he taught a generation of human rights activists about scientific rigor.

Herb was a military policeman in occupied Japan after World War II. After earning an undergraduate degree in engineering physics, he worked as an engineer, building and programming computers at the dawn of their use in the early 1960s. He earned his MA and PhD in operations research from New York University and, in 1966, began an academic career as a lecturer at the University of Connecticut, where he became a full professor in 1975. He stayed at UConn for 25 years.

He began his human rights-related work after a conversation with Richard Savage, the renowned statistician who inspired other statisticians to enter the field of human rights. In “A History of the ASA Committee on Scientific Freedom and Human Rights to 2015,” Spirer recalls this about his conversation with Savage: “I was helping to make corporations more wealthy for 20 years and I wanted to help contribute something.”

In this early period, Herb collaborated with statistician Doug Samuelson, who recalled that Herb was an early and enthusiastic adopter of email for remote collaborations. Herb and Doug pioneered key thinking about the nonrandom pattern of missingness in human rights data. Herb’s insights and gentle humor inspired collaborations and helped launch the subfield of statisticians working on human rights questions. Herb and Louise wrote *Data Analysis for Monitoring Human Rights* (1994). It was a textbook for statistical novices and has been translated into several languages, including Russian and Nepalese.

Herb served as a statistical consultant on data analysis to the United Nations International Tribunal on the former Yugoslavia, Human Rights Watch, the Institute for the Study of Genocide, and many other NGOs. As a member and chair of the American Statistical

Association’s Committee on Scientific Freedom and Human Rights, he led a number of human rights campaigns in several countries.

Herb was an indefatigable supporter of scientists attacked for their work. Demographer Beth Daponte remembers that, in the early 1990s, Herb “came out of the heavens like an angel in my moment of need and turned my life totally around. I remember the first time I heard his voice. It was on my answering machine in Alexandria. *The Washington Post* had run the story that morning of how the Census Bureau ‘proposed to fire me’ when [my] Iraqi wartime mortality estimates came out, and it was as if my phone was on constant ring . . . [but] when I heard Herb’s voice [on the answering machine], I knew that, in the long run, I would be okay.”

I first met Herb in 1993 through the American Association for the Advancement of Science (AAAS). We debated database design and, with Louise, he read every one of my dissertation chapters and reports I wrote for the AAAS. He and Louise faxed pages back to me with detailed, invaluable, insightful comments. They were candid, sometimes even rough, but I always felt the depth of the connection and compassion they felt for me. They taught me to write more carefully and to reason more deeply. Herb showed me how to apply statistical thinking to a far wider range of problems than I’d ever before considered. Perhaps the best example came in 1995.

Herb realized we could compare patterns of homicides documented in the records of the Haitian National University morgue with killings reported to the National Commission for Truth and Justice. After long email conversations while I sat in Port-au-Prince and he sat in Stamford, we found the two patterns coincided in time and over geography and concluded that either the two series were unbiased or they shared the same bias.

This was the first time I considered whether observed data with no probability sampling might not represent the true patterns. Herb and I later collaborated on a book about Guatemala (*State Violence in Guatemala*) and, with Louise, we edited a volume of technical reports by staff members of the truth commissions in El Salvador, Haiti, Guatemala, and South Africa (*Making the Case*). I think Herb and Louise may have rewritten every one of the technical reports, and their insistence on clarity and focus is the central reason the volume is so valuable to both technical and nontechnical readers.

Herb and Louise taught human rights activists at Columbia’s School of International and Public Affairs (SIPA) during the late 1990s. One of their co-teachers, Fred Abrahams of Human Rights Watch, recalled, “Herb taught me about the stories that numbers can tell, the hidden lines of truth that make a forceful human rights case. He demanded rigor in the collection and analysis of data, as a professional scientist would. And he pushed for that analysis to feed into the conclusions and recommendations we make so abuses are minimized or stopped.”

Another of the Spirers’ SIPA colleagues was Scott Campbell, now at the United Nations High Commission for Human Rights. Scott recalls Herb’s boundless energy and contagious enthusiasm for human rights and science. “He was so passionate about both—and getting the science (and data) right to advance human rights as effectively as possible.”

Herb was given many awards related to his human rights advocacy. He was elected as a fellow of the ASA (1994) and a member of the International Statistical Association in recognition of his achievements in applying statistical analysis to human rights. In 2009, he was inducted into the UConn Hall of Fame with an emeritus faculty award.

He was funny, he was kind, and he was full of infectious enthusiasm. At a party for human rights activists at my house in 1996—he would have been 71—he challenged everyone there to a push-up contest. He got no takers because he was so obviously fitter than any of us who were 40 years younger. He insisted instead that we push back the furniture and turn up the music. He and Louise danced so gracefully we were inspired to live and love as well as they did. Herb’s life exemplified the best of what a scientist can offer: precision, honesty, modesty, and a fascination with technical concerns bound to a deep commitment to making the world a better place. I know I speak for dozens of others when I say it is among my life’s greatest points of pride to number myself among his students.

Donations can be made in memory of Herbert Spirer to the Spirer/Dueker Student Humanitarian Achievement Award Fund at the University of Connecticut. Please make checks payable to The UConn Foundation, Inc. and include the following: Spirer/Dueker Student Humanitarian Achievement Award Fund (#30821) in memory of Herbert Spirer. Mail to UConn Foundation, 2390 Alumni Drive, Unit 3206, Storrs, CT 06269. You can also donate online at bit.ly/2QvWel6.

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

Program	Deadline	Nominations	Questions
Karl E. Peace Award	Feb. 1, 2019	awards@amstat.org	Laurel A. Beckett labeckett@ucdavis.edu
W. J. Dixon Award for Excellence in Statistical Consulting	Feb. 1, 2019	awards@amstat.org	Michael E. Griswold mgriswold@umc.edu
Harry V. Roberts Statistical Advocate of the Year Award	Feb. 15, 2019	awards@amstat.org	Anthony J. Babinec tbabinec@sbcglobal.net
Samuel S. Wilks Memorial Award	Feb. 15, 2019	awards@amstat.org	Steven G. Heeringa sheering@isr.umich.edu
W. J. Youden Award in Interlaboratory Testing	Feb. 15, 2019	awards@amstat.org	Angela M. Dean amd@stat.osu.edu
Waller Awards	Feb. 15, 2019	awards@amstat.org	Ann R. Cannon acannon@cornellcollege.edu
Statistics in Physical Engineering Sciences Award	Feb. 20, 2019	Ming Li, mli@alumni.iastate.edu	
Gertrude M. Cox Scholarship	Feb. 23, 2019	awards@amstat.org	Eloise E. Kaizar ekaizar@stat.osu.edu
Causality in Statistics Education Award	March 1, 2019	educinfo@amstat.org	
Edward C. Bryant Scholarship Trust Fund	March 1, 2019	awards@amstat.org	Dipankar Bandyopadhyay dbandyop@vcu.edu
Excellence in Statistical Reporting Award	March 1, 2019	awards@amstat.org	Sat N. Gupta sngupta@uncg.edu
ASA Fellows	March 1, 2019	awards@amstat.org	
ASA Mentoring Award	March 1, 2019	awards@amstat.org	Lillian S. Lin ls.lin.mt@gmail.com
Outstanding Statistical Application Award	March 1, 2019	awards@amstat.org	Jung-Ying Tzeng jytzeng@stat.ncsu.edu
Statistical Partnerships Among Academe, Industry, and Government (SPAIG) Award	March 1, 2019	awards@amstat.org	Kelly H. Zou kelly.zou@pfizer.com
Founders Award	March 15, 2019	awards@amstat.org	Lisa M. LaVange lisalavange.asa@gmail.com
Biopharmaceutical Section Scholarship Award	March 15, 2019	https://community.amstat.org/biop/awards/scholarship	
Links Lecture Award	May 1, 2019	awards@amstat.org	Arthur B. Kennickell arthur.kennickell@gmail.com
Lester R. Curtin Award	Oct. 15, 2019	awards@amstat.org	Ronald L. Wasserstein ron@amstat.org
Lingzi Lu Memorial Award	Oct. 15, 2019	awards@amstat.org	Victoria Sides victoriasides16@gmail.com
Deming Lecturer Award	Nov. 15, 2019	awards@amstat.org	Roger W. Hoerl roger.hoerl@gmail.com
Monroe G. Sirken Award in Interdisciplinary Survey Methods Research	Oct. 15, 2019	awards@amstat.org	John L. Czajka jczajka@mathematica-mpr.com
Elizabeth L. Scott Award	Dec. 15, 2019	community.amstat.org/copss/home	

Jeanne E. Griffith Mentoring Award

The Jeanne E. Griffith Mentoring Award recognizes and encourages the mentoring of junior staff in the statistical community in federal, state, or local government. It is awarded annually to a supervisor, technical director, team coordinator, or other statistical staff member who is nominated by a supervisor and co-workers for his or her efforts in supporting the work and developing the careers of junior staff.

The award was established to honor Griffith, who died in August 2001, after working for more than 25 years in the federal statistical system. Throughout her career, and especially in her latter senior management positions at the National Center for Education Statistics and the National Science Foundation, one of Griffith's highest priorities was to mentor and encourage younger staff at all levels to learn, grow, and recognize and seize career opportunities as they came along.

The award recipient will be selected for his or her efforts to support the work and develop the careers of junior staff. Preference will be given to individuals with a track record of mentoring government statisticians. Examples of typical mentoring activities include the following:

- Advising junior staff to help them create career opportunities, networking skills, and contacts for growth and development
- Counseling junior staff and providing resources to help develop their technical writing, analysis, presentation, and organizational skills and knowledge
- Encouraging the growth and career development of junior staff through attendance and oral presentations at meetings with higher-level officials, staff of other agencies, professional associations, training courses, and conferences
- Motivating junior staff and building self-confidence by providing feedback, being a listener when needed, and creating a caring and supportive environment
- Serving as a role model for junior staff through professional expertise; information and insights; balancing collegial and personal roles; and including everyone regardless of rank, race, ethnicity, or seniority

Previous Award Winners

Rich Allen (National Agriculture Statistical Service), 2003

Beth Kilss (Internal Revenue Service), 2004

Renee Miller (Energy Information Administration), 2005

Martin O'Connell (US Census Bureau), 2006

Stephanie Shipp (National Institute of Standards and Technology), 2007

Rosemary D. Marcuss (Bureau of Economic Analysis), 2008

Kevin Cecco (Internal Revenue Service) and **Lillian S. Lin** (Centers for Disease Control and Prevention), 2009

Deborah H. Griffin (US Census Bureau), 2010

Jenise L. Swall (US Environmental Protection Agency), 2011

Bill Mockovak (Bureau of Labor Statistics), 2012

Brian Harris-Kojetin (Office of Management and Budget), 2013

J. Gregory Robinson (US Census Bureau) and **Kenneth Schoendorf** (National Center for Health Statistics), 2014

Aldo "Skip" Vecchia (US Geological Survey), 2015

Diane L. Willimack (US Census Bureau), 2016

Cynthia Ogden (National Center for Health Statistics), 2017

Carol Gotway Crawford (US Government Accountability Office), 2018

Nominations for the 2019 will be accepted until March 22. The nomination form and guidelines are available from the Government Statistics Section and the Social Statistics Section websites (see bit.ly/2GgpeIf).

The award committee will determine the award winner in April. The award will consist of a \$1,000 honorarium, a citation, and a plaque, which will be presented at a ceremony arranged by the co-sponsors. Contact Kevin Cecco at kxcecc00@gmail.com if your organization would like to co-sponsor the award.

The nomination package must be emailed to rick@amstat.org or mailed to the Jeanne E. Griffith Mentoring Award Committee, c/o The American Statistical Association, 732 N. Washington Street, Alexandria, VA 22314-1943

Questions about the award can be addressed to ASA Professional Development and Sections and Chapters Manager Rick Peterson at rick@amstat.org or (703) 684-1221 or the chair of the award committee, Bill Mockovak, at Mockovak.William@bls.gov. ■

Nominations Wanted for 2019 Gertrude M. Cox Award

2019 Award Committee Members

WSS President Tom Krenzke (co-chair)

WSS Past President Linda Young

WSS President-Elect Eilleen O'Brien

Abhik Das, RTI

Phil Kott, RTI

Karol Krotki, RTI (co-chair)

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

In 1945, Cox became director of the Institute of Statistics of the Consolidated University of North Carolina. In the 1950s, as head of the North Carolina State College Department of Experimental Statistics, she played a key role in establishing mathematical statistics and biostatistics departments at the University of North Carolina. Upon her retirement from North Carolina State University in 1960,

Cox became the first head of the Statistical Research Division at newly founded RTI. She was a founding member of the International Biometric Society (IBS), and in 1949, became the first woman elected into the International Statistical Institute. She served as president of both the American Statistical Association (1956) and IBS (1968–1969). In 1975, she was elected to the National Academy of Sciences.

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

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

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

Please email your nominations to Karol Krotki at kkrotki@rti.org by February 28, 2019, with a supporting statement and CV (or a link to one).

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

Nominate a Colleague for ASA Fellow

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

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

- Published works

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

To be eligible for nomination, a person must be a current member of the ASA who has held continuous membership from March 1, 2016, to February 28, 2019.

Nominations may be submitted online until March 1 at bit.ly/2CdCfPx.

sectionnews

Quality and Productivity

Brian P. Weaver, 2019 Section Chair

I'm humbled to have been selected by all of you to serve the Quality and Productivity Section (Q&P) as the 2019 chair. Q&P is a section for collaboration among statisticians from universities, manufacturing industries, and government agencies.

Q&P has had the good fortune to advance statistics through collaboration. As times have changed, the type of problems the typical Q&P researcher experiences has also evolved. We are now found working in areas such as customer call centers, fraud detection, and finance. As a result, the Q&P statistician has had to expand their statistical toolbox, reaching into the realms of statistical machine learning, parallel computing, uncertainty quantification, and other branches of statistics not traditionally associated with the quality researcher. It is an exciting time to be a section member!

I would like to thank all Q&P officers and volunteers. Many statisticians and other researchers greatly benefit from your contributions. If you have any questions, concerns, suggestions, or are interested in volunteering, please email me at theguz@lanl.gov. I would love to meet you in person at one of Q&P's sponsored events!

Every year, Q&P sponsors three conferences, student awards, and one achievement award.

2019 Quality and Productivity Research Conference (QPRC)

QPRC will be held at American University in Washington, DC, June 10–13, with a short course offered June 10. The theme of the 2019 conference is “Data and Science Bring Quality, Reliance.” We invite you to contribute a talk or poster presentation. Visit bit.ly/2GhZkoe for details.

In conjunction with QPRC, the Mary G. and Joseph Natrella Scholarship offers a grant and travel stipend to students pursuing full-time graduate work with demonstrated interest in quality and statistics. For more information, visit bit.ly/2LhXCls.

2019 Joint Statistical Meetings (JSM)

JSM 2019 will be held from July 27 to August 1 in Denver, Colorado. Q&P will offer up to three JSM travel awards of \$400 for students enrolled in a graduate program with a concentration in applied statistics and/or quality management. Student applicants must show a demonstrated interest in quality applications, as evidenced by coursework, research topics, or prior working experience. Applicants either presenting a paper or participating in a poster session will receive extra consideration. Complete

information about the award and how to apply is posted at bit.ly/1vZQVZd.

As JSM approaches, stay tuned for more information about Q&P-sponsored events, including the Q&P mixer.

2019 Fall Technical Conference (FTC)

The 63rd FTC will be held September 25–27, 2019, in Gaithersburg, Maryland, at the National Institute of Standards and Technology. The theme of this year's conference is “Statistics: Setting the Standard for Success in Quality.” The goal is to engage researchers and practitioners in a dialogue that leads to more effective use of statistics to improve quality and foster innovation. For more information, visit www.falltechnicalconference.org.

Gerald J. Hahn Q&P Achievement Award

Q&P continues to sponsor the Gerald J. Hahn Achievement Award. This award recognizes an individual who has demonstrated outstanding and sustained achievement and leadership in developing, promoting, and successfully improving the quality and productivity of products and organizational performance using statistical concepts and methods over a period of 20 or more years. Nominations are due February 28. For more information, visit bit.ly/24QS8zt. ■

Physical and Engineering Sciences Message from Incoming Chair

Byran Smucker

The Section on Physical and Engineering Sciences (SPES) is one of the oldest ASA sections, but there is a need to continually evaluate the mission, objectives, and strategies to serve our membership faithfully and effectively. If you are a member of SPES, I encourage you to review our charter at bit.ly/2rEcS3e and provide feedback regarding parts you affirm and elements that should be modified or jettisoned.

In the same spirit, here are a couple of ideas I will be thinking about over the next year.

First, I hope SPES expands support for big data tools and methods within our community. Though we will continue to maintain a strong presence in the traditional areas of importance to our membership, there are many applications in industrial statistics, the physical sciences, and engineering that require the use of large-scale data analysis methods.

The Spring Research Conference is an example of a SPES-sponsored institution that has evolved productively in this area. A recent announcement for the 2019 SRC at Virginia Tech in May included the following: “Although historically emphasizing industrial statistics, design, quality, and reliability, increasingly the meeting emphasizes modern methods in learning and high-performance computing in statistical methodology, with diverse applications throughout the applied sciences.” I hope SPES can continue on this trajectory and equip our members with the skills they need to be

successful in both traditional and emerging statistical areas.

If you are interested in advancing ideas combining data science, machine learning, or big data methods with application areas of interest to the SPES community, please consider getting involved. For instance, you might plan a workshop that specifically connects big data or machine learning to industrial statistics and related areas, or you might organize an invited session at JSM or the Fall Technical Conference discussing how the SPES community can connect more strongly to these areas. Email me at smuckerb@miamioh.edu if you'd like to discuss your ideas.

A second thought is about the Marquardt Memorial Industrial Speakers Program (bit.ly/2ElbSZc). This program provides funding for industrial statisticians to visit universities and discuss their work as industrial statisticians, as well as opportunities in the area. The program is not widely known or used by universities around the country. How can we improve the visibility of the program? What changes might be made to it so it can achieve its underlying objective: to promote industrial statistics and opportunities to the larger statistics community?

An engaged membership is crucial for SPES. In addition to the SRC referenced above, SPES has an active presence at the Joint Statistical Meetings in Denver (the joint mixer being a highlight) and the Fall Technical Conference in late September

at the National Institute of Standards and Technology. Your involvement in these activities is desired and appreciated. I welcome any feedback or additional ideas and look forward to serving you in 2019.

Call for SPES Award Nominations

Ming Li, SPES Award Committee Chair

The SPES Award is bestowed upon a distinguished individual or individuals based on their innovative use of statistics to solve a high-impact problem in the physical and engineering sciences. In odd-numbered years, the award is presented for a paper published in a refereed statistics, physics, chemistry, or engineering journal during the previous two years. Nominations are due by February 20. For more information, visit bit.ly/2QWSRTC.

2019 Spring Research Conference

Robert Gramacy, SRC Organizing Committee

Members of the 2019 SRC organizing committee (Bobby Gramacy, Yili Hong, and Xinwei Deng) and program committee (Bobby Gramacy, David Edwards, Ana Kupresanin, C. Devon Lin, Lu, Bill Myers, and Brian Reich) invite you to join them at the conference, which will take place at Virginia Tech May 22–24.

The SRC is SPES's annual meeting. Although it has historically emphasized industrial statistics, design, quality, and reliability, the meeting is increasingly emphasizing modern methods in learning and high-performance computing in statistical method-

chapternews

ology, with diverse applications throughout the applied sciences.

The invited program, including keynote presentations from David Banks of Duke/SAMSI and Christine Anderson-Cook of Los Alamos National Laboratory and a banquet talk by Oliver Schabenberger of SAS, is shaping up nicely. Details are available at bit.ly/2zY4sZ2.

We have begun preparing our contributed program, including talks and posters. Contributed talks are really no different than invited talks, except the process is competitive, rather than curated by the program committee. Individuals wishing to contribute to the program should send a title and abstract to Robert Gramacy at rbg@vt.edu with “SRC 2019 Contribution” in the subject line. Contributed talks and posters will be entertained simultaneously, although you may indicate if you would prefer to not give a talk.

Thanks to our sponsors, we are able to offer a limited number of student travel scholarships. If you wish to be considered for one, please also provide a short statement of interest in the meeting (e.g., how it would benefit your study), a CV/résumé, and a note from your adviser (on letterhead) confirming your student status and explaining the nature of your role in the research you are proposing to present at the meeting. All funded students must contribute a talk or poster, so this application for funding should be combined with the email described in the paragraph above.

The deadline for contributing to the program and applying for a student travel scholarship is January 31. ■

North Carolina



The North Carolina Chapter helped host a one-day workshop for high-school statistics teachers.

The North Carolina Chapter partnered with the North Carolina School of Science and Mathematics, SAS JMP, and RTI International to offer a one-day workshop for high-school statistics teachers in September. Workshop instructors Breda Munoz (RTI), Floyd Bullard and Dan Teague (North Carolina School of Science and Mathematics), and Ruth Hummel (SAS JMP) provided training in topics relevant to the AP Statistics curriculum. Fifteen people attended the workshop, and future workshops are in the planning stages.

University of Virginia Student Chapter



Members of the University of Virginia Student Chapter

For members of the University of Virginia Student Chapter, preparing for and attending the Joint Statistical Meetings (JSM) in Vancouver was a priceless experience. Not only did they get to explore some of the most exciting topics in statistics, they were given the opportunity to join various groups within the statistical community and present their work.

Using their individual strengths, the students created material that accurately conveyed the error in prediction of weather in various forms. This allowed them to improve their communication, teamwork, and analytical skills; however, attending JSM gave them the added opportunity of exploring more ways to represent and model the data through the constructive feedback they received during their poster session.

The students also enjoyed exploring Vancouver and all the city offers. “It was truly an amazing experience,” says Katherine Qian. “I would recommend anyone interested in the field of statistics to attend.”

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/datetime.

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

» Indicates events posted since the previous issue

2019

February

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

For details, visit bit.ly/ASACSP2019 or contact ASA Meetings, 732 North Washington St., Alexandria, VA 22314; (703) 684-1221; meetings@amstat.org.

March

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

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

May

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

For more information, visit bit.ly/SIAMsdm19 or contact Eva Donnelly, 3600 Market St., 6th Floor, Philadelphia, PA 19104; (215) 382-9800; 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.



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EOE

»13–17—NSF-CBMS Regional Conference on Topological Methods in Machine Learning and Artificial Intelligence, Charleston, South Carolina

For more information, visit math.cofc.edu/CBMS-TDA2019 or contact Ben Cox, 66 George St., Charleston, SC 29424-0001; (843)953-4973; coxbl@cofc.edu.



August

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

For more information, visit bit.ly/WHOAPSI2019 or contact Todd Kuffner, 1 Brookings Drive, St. Louis, MO 63130; kuffner@wustl.edu.

»19–23—NSF-CBMS Regional Research Conference: Fitting Smooth Functions to Data, Austin, Texas

For details, contact Arie Israel, 3925 W. Braker Lane, Suite 3.340, Austin, TX 78759-5316; (512) 471-6424; arie@math.utexas.edu.



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

For more information, visit bit.ly/SDSS2019 or contact ASA Meetings, 732 N. Washington St., Alexandria, VA 22314; (703) 684-1221; meetings@amstat.org.

June

»16–19—39th International Symposium on Forecasting, Thessaloniki, Greece

For details, visit isf.forecasters.org or contact Pamela Stroud, 53 Tesla Ave., Medford, MA 02155; (781) 234-4077; isf@forecasters.org.



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

For details, visit bit.ly/IWSM2019 or contact Aleksey Polunchenko, 4400 Vestal Parkway East, Binghamton, NY 13902; (607) 777-6906; iwsm2019@gmail.com.

July

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

For details, visit 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.

»22–26—European Meeting of Statisticians (EMS 2019), Palermo, Italy

For more information, visit bit.ly/EMSPalermo2019 or contact Angelo Mineo, Viale delle Scienze, Ed. 13, Palermo, International 90128, Italy; ems-2019@unipa.it.

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

For details, visit bit.ly/JSM2019 or contact ASA Meetings, 732 North Washington St., Alexandria, VA 22314; (703) 684-1221; meetings@amstat.org.



September

***23–25—2019 ASA
Biopharmaceutical Section
Regulatory-Industry Statistics
Workshop, Washington, DC**
For more information, visit bit.ly/Biopharm2019 or contact ASA Meetings, 732 North Washington St., Alexandria, VA 22314; (703) 684-1221; meetings@amstat.org.



October

**10–12—The 3rd International
Conference on Statistical
Distributions and Applications
(ICOSDA 2019), Grand Rapids,
Michigan**
For more information, visit bit.ly/2V36AYo or contact Felix Famoye, Department of Mathematics, Mt. Pleasant, MI 48859; (989) 774-5497; felix.famoye@cmich.edu.

2020

January

***6–8—2020 International
Conference on Health Policy
Statistics (ICHPS), San Diego,
California**
For more information, visit bit.ly/ICHPS2020 or contact ASA Meetings, 732 North Washington St., Alexandria, VA 22314; (703) 684-1221; meetings@amstat.org.



June

**»24–27—5th International
Workshop on Functional and
Operatorial Statistics (IWFO
2020), Brno, Czech Republic**
For details, visit iwfos2020.sci.muni.cz or contact David Kraus, Kotlářská 2, Brno, International 611 37, Czech Republic; david.kraus@mail.muni.cz. ■

Florida

■ UCF College of Medicine seeks two biostatisticians to form a biostatistics core in support of multi-disciplinary research. Duties include providing statistical support; developing formal analytical plans; performing statistical analyses; and participating in preparation of manuscripts and grant applications. A master's degree in biostatistics or a related field is required, prior experience and knowledge of modern methodologies is preferred. bit.ly/2Pu4g8R. EOE.

Iowa

■ The Department of Statistics at Iowa State University invites applications for tenure-track assistant professorship w/preferred collaboration focus in the social sciences, beginning 8/16/2018. Duties include undergraduate and graduate teaching, graduate advising, and a high-impact research program that can compete for external funding. A PhD or equivalent degree in statistics or closely related discipline is required. bit.ly/2LaZlJd. EOE/AA.

■ The Department of Statistics at Iowa State University invites applications for tenure-track assistant professor position with focus on data science, beginning 8/16/2018. Duties include undergraduate and graduate teaching, graduate advising, and a high-impact research program that can compete for external funding. A PhD or equivalent degree in statistics or a closely related discipline is required. bit.ly/2G9y3nP. EOE/AA.

■ The Department of Statistics at Iowa State University is seeking candidates for one tenure-track assistant professor position. The appointment will be affiliated with the Center for Statistics and Applications in Forensic Evidence. Duties of a successful candidate will include statistics research related to forensic sciences, undergraduate and graduate teaching, graduate advising, and professional and institutional service. The complete position posting at bit.ly/2B6TNuK. EOE/AA.

Maryland

■ The Emmes Corporation in Rockville, MD, a full-service Contract Research Organization, has openings for PhD-level statisticians to serve on and lead multi-

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

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

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

These listings and additional information about the 65-word ads can be found at 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>.

disciplinary project teams supporting clinical research with great public health impact across a range of disease areas. Requirements: Solid background in statistical methods with a PhD in biostatistics/statistics/epidemiology, strong oral and written communication skills, and leadership potential. Apply directly online at www.emmes.com. EOE.

Massachusetts

■ Biostatistics Faculty Position available at Instructor or Asst. Prof. level in psychiatric biostatistics program. Responsible for developing collaborations with McLean investigators and participating in statistical consultation service. Doctoral degree in biostatistics or a statistics-related field required; publication record in methods or applications; 3+ years of experience in collaborative research. Send CV, research interests statement: Garrett Fitzmaurice, Search Chair Email: gfitzmaurice@mclean.harvard.edu. www.mcleanhospital.org. EOE/AA.

■ The Department of Mathematical Sciences at Bentley University, located in Waltham, Massachusetts, invites applications for a tenure track position beginning Fall 2019. We seek candidates to add to our strengths in applied statistics, data science, machine learning, and applied mathematics. The rank and salary will be commensurate with experience. To learn more and to apply, please go to bit.ly/2PpQ202. EOE.

■ Applications are invited for a full-time visiting assistant professor in statistics with a three-year appointment to begin on July 1, 2019. Responsibilities include teaching four undergraduate statistics courses a year and helping with the comprehensive evaluation of senior majors. See the full ad and submit applications at MathJobs.Org. All applications received by February 22, 2019, will be guaranteed consideration. Questions can be addressed to mathstats@amherst.edu. EOE.

New Jersey

■ Statistics/Biostatistics Faculty. Rutgers School of Nursing invites applications for a full-time faculty position for candidates with a doctoral degree focused in statistics, biostatistics, or related discipline. The position will be based primarily in Newark, New Jersey. Teaching assignments will be focused on PhD-level courses that are part of the required curriculum of our PhD Program. We offer highly competitive salaries and benefits. Apply: <http://bit.ly/2C59cxb>. EOE.

Pennsylvania

■ The University of Pittsburgh seeks applicants for two tenure track Assistant Professor positions in the Statistics Department beginning September 2019, pending budgetary approval. See www.stat.pit.edu/ for more information. Applicants

should apply online at <http://bit.ly/2UBPaSo>. Review of applications begins 12/10/2018. EOE/AA/M/F/Vets/Disable.

■ 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>. EOE.

■ Statistics Practice Track Faculty. The University of Pennsylvania School of Nursing seeks a master teacher to lead the statistics sequence of courses for the PhD program with responsibility for the data analytic components of the curriculum. We invite individuals with a doctoral degree in statistics, biostatistics, or related field to submit a cover letter and curriculum vitae: bit.ly/2RXu6UR EOE.

■ The Wharton Statistics Department, University of Pennsylvania, seeks a Postdoctoral Researcher in statistics and/or probability. The position is for two years beginning in Summer 2019, with a possible extension to three. The primary focus is for the scholar to develop her/his research. A light teaching load is involved. A Ph.D. is required. Please visit our website to apply: <https://wharton.upenn.edu>. Please direct questions to stat.postdoc.hire@wharton.upenn.edu. EOE.

Tennessee

■ The Department of Mathematical Sciences at the University of Memphis is recruiting for a tenure-track Assistant Professor in Statistics to begin August 2019. Qualifications includes, PhD in Statistics Biostatistics or related fields, with research interests in Data Science and Bayesian Inference. Details available: bit.ly/2zVu0Gh. Application online at bit.ly/2zTCYn6. Review begins January 2019. Email: eogorge@memphis.edu in the Fall Semester, lihdeng@memphis.edu in the Spring semester. EOE.

Virginia

■ The George Mason University Department of Statistics, is seeking a chair who is a distinguished scholar, educator, and researcher who can lead the department into a dynamic phase of development and growth. The deadline for applications is January 7, 2019; however, the review of applications will continue until the position is filled. To learn more, please go to jobs.gmu.edu for position F365AZ. EOE/AA.

International

■ Assistant Professors at Department of Statistics, School of Mathematical Sciences, Shanghai Jiao Tong University. Candidates should possess a PhD in statistics (or mathematics) and demonstrate outstanding performance in both research and teaching. Annual salaries are competitive by international standard and among the highest in China. Candidates should send a letter of application, CV and at least three letters of references, electronically to math.recruitment@sjtu.edu.cn.

Ontario

■ The Department of Statistics and Actuarial Science, University of Waterloo invites applications for 5 tenure-track or tenured position in Statistics, Biostatistics or Data Science, subject to budget approval. A PhD in Statistics, Biostatistics or related areas is required. Apply through (www.mathjobs.org/jobs). Include cover letter, CV, research/teaching statements, up to three reprints/preprints and three reference letters. Full advertisement bit.ly/2rFArxx. Closing: December 7, 2018. EOE.

■ The Department of Statistics and Actuarial Science, University of Waterloo invites applications for 1 tenure-track or tenured position in Actuarial Science. A PhD in the area of the actuarial, statistical or mathematical sciences or mathematical finance is required. Apply through (www.mathjobs.org/jobs). Include cover letter, CV, research/teaching statements, up to three reprints/preprints and three reference letters. Full advertisement bit.ly/2rFArxx. Closing: December 7, 2018. EOE. ■



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Please send, preferably by email, curriculum vitae and statement of research interests to:

Garrett Fitzmaurice, ScD
Chair, Biostatistician Search Committee
McLean Hospital, Mail Stop 307
115 Mill Street
Belmont, MA 02478
Email: gfitzmaurice@mclean.harvard.edu

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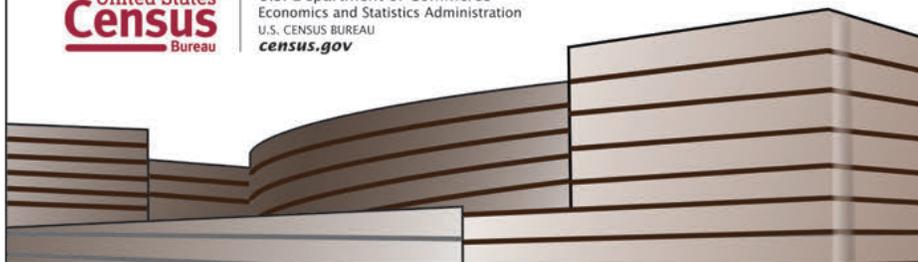
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SOCIAL CHATTER



We asked our followers ...

Other than "Moneyball," can you name a movie, sitcom, or cartoon that includes a statistician as a character?

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NEXT MONTH :

We'll ask our followers—
What's the one character trait you need to be a statistician?
Make sure to tag @AmstatNews in your response.



Robert Weiss *Star Wars* - C3PO was always throwing out statistics about survival.

└ **Alex Lear** "R2, we have a 0.001 percent chance of making it into Episode V!"

Terry Walsh There's a classic *Simpsons* episode where Homer/Bart are watching a space launch & the the 3 astronauts are described as, "There's a mathematician, a different kind of mathematician, and a statistician."

Mila Roozen Chandler from *Friends*! Though he might be considered a data scientist instead of a statistician.

└ **Laura Taylor Baysden** Apparently his title was IT procurement manager with the specialization "statistical analysis and data reconfiguration."

Christoph Hanck Being very generous in the definition of a statistician: *A Beautiful Mind*

└ **Hamza Trari** game theory 😊



Steven Foti

@DrSteveFoti

Charlie Eppes from *Numb3rs*, while technically a PhD applied mathematician, utilizes a lot of statistics in solving many of the problems. Cornell Math Dept. even has a website where episodes are discussed & sorted by math/stat topic!
bit.ly/2A3Frvo

Jess Hartnett

@Notawful

Kent on @VeepHBO is a stats guy who works with polling data. And on *Brooklyn 99*, Captain Holt is a very data driven kind of guy.

Yossi Levy

@yoslevy

How about a novel?
Bellwether by
Connie Willis.



Statistics

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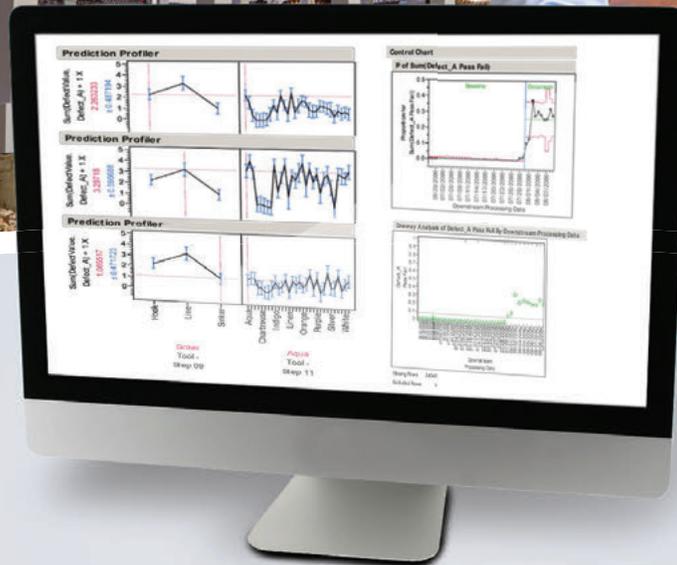
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