

December 2020 • Issue #522

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- July 1, 2021
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- June 1, 2021
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- June 30, 2021
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AMSTATNEWS

DECEMBER 2020 • ISSUE #522

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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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A Look at How Statistical Science Is Making an Impact on Poverty

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 **MASTER'S NOTEBOOK**
To Get a PhD or Not to Get a PhD? Part 3

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.

- 29 **STATtr@k**
Students Share Virtual Experiences, Tips for Handling Pandemic

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.

Happy Holidays

All of us at the ASA join in wishing you a wonderful holiday season and prosperous, healthy New Year!

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Get involved in JSM 2021!
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What a Year It Has Been!

The original plan for my last president's column was to provide a recap of my presidential year, assuming it would be business as usual for an ASA president. Needless to say, this has not been a typical year for any of us. While there have been plenty of challenges, I am grateful for the opportunity to be your president and end this year with renewed appreciation of our community. In the spirit of "end of the year" lists, and in no particular order, I want to share my top 10 with you. And you should know it was a challenge to keep the list to 10 because there were so many highlights.

Number 10: Opportunity to Be the Keynote Speaker at CSP 2020

The Conference on Statistical Practice is one I really enjoy attending every year. I had the opportunity to talk about data ethics, which is one of the critical topics for our community (IMHO). This was also the topic of my May *Amstat News* column (see <https://bit.ly/3pC9GBR>).

Number 9: Opportunity to Connect with the International Community of Statisticians, Biostatisticians, and Data Scientists

Although travel was restricted in 2020, I did have the opportunity to spread my wings in the beginning of the year. I was honored to attend the 2nd International Conference on Applied Statistics, which was held at the University of Dhaka Institute of Statistical Research and Training in Bangladesh, where I gave a keynote talk. This was followed by a visit to City University of Hong Kong and Tokyo, Japan. There, I met with the director-general of the Institute of Statistical Mathematics, Hiroe Tsubaki, and the president of the Japan Statistical Society, Shigeru Kawasaki. I will continue to make international outreach an important part of my service to the community in the coming years.

Number 8: Opportunity to Interact with Kids

Contributing to education in statistics and data science is an essential responsibility of our profession. Education has been a strategic goal of the ASA for a long time, and our focus in 2020 was on statistical and data science education in the early years (5–11 years of age). One of my fondest memories of this year was the opportunity I had to chat with two middle-schoolers in a Stats + Stories podcast. It is a testament to our strong community relationships that

we were able to have this conversation in the midst of the virtual learning required by the pandemic. You can listen to the podcast at <https://bit.ly/36Nx142>.

Number 7: Opportunity to Serve on the ASA COVID-19 Task Force

Although my colleagues on the ASA Board deserve the credit for their substantive contributions, it was a privilege to serve with them. The board supported the creation of the COVID-19 community and many of you shared your research and resources on the community, as well as during webinars and workshops.

Number 6: Opportunity to Collaborate with Colleagues on the Presidential Initiatives

Not only have I learned a lot while working on the initiatives, I now have a deeper respect for the energy, talent, and spirit of my colleagues. I am looking forward to working with my LGBTQ+ and K–6 friends in the coming year, especially as we work together on 2021 President Rob Santos' initiatives to *build community*.

Number 5: Opportunity to Learn About the Amazing Work Accomplished by the Committees That Make Up the Various Councils

Associations like ours depend on volunteers just like you, and I thank all of you for serving. Most of the ASA committees are organized under four councils: Awards, Education, Membership, and Professional Issues and Visibility. Not only was I able to appoint members to committees during my year as president-elect, but I participated in several of their events in 2020. Two of my favorites were the Meeting Within a Meeting for teachers and StatFest, where I participated in a panel on opportunities in statistics and data science.

Number 4: Opportunity to Work with the ASA Staff

My year as president has confirmed what I already knew—our association is well served by the professional staff. All staff are appreciated, as they have worked hard this year dealing with the many challenges we faced. However, I especially want to thank our executive director, Ron Wasserstein, who has been keeping the ASA ship on course. And I cannot thank Donna LaLonde enough. She is not only a colleague, but also a close friend.



Wendy Martinez



A Global JSM 2020

Thank you to the audience members around the world who provided their location during the talk! This map shows the locations of the 266 who responded to the request. See <https://bit.ly/38Z1qps> for the map and more.

Number 3: Opportunity to Choose the JSM Theme

One of the first tasks I had as the 2020 ASA president was to choose the JSM 2020 theme. JSM is one of the premier events for our profession, and the JSM theme is important because it can have an impact on the content of the meetings. I had a lot of fun coming up with a theme with the help of JSM Program Chair David Banks and the ASA Meetings Department staff.

My very next JSM-related task was to select the President's Invited Speaker. Erica Groshen gave a wonderful talk highlighting the essential role of federal statistics. This led to a World Statistics Day celebration that took place on October 20 (<https://world-statisticsday.org>). We had several wonderful panelists and discussants from around the world who continued the conversation Erica started at JSM. The *Harvard Data Science Review* (<https://bit.ly/3lJr9pM>) is planning a special publication with papers written by the panelists. In case you missed it, you can view the celebration at <https://youtu.be/3rAZS3I3Vh8>.

Number 2: Opportunity to Come Together with My Colleagues at the Virtual JSM

It is definitely a highlight of my year to learn more about the great work we are doing in our

profession! It was a challenge for our ASA meetings staff, presenters, exhibitors, and attendees to change from an in-person conference to a virtual one. Everyone stepped up and made it happen, however. It was particularly exciting to be able to meet virtually with statisticians and data scientists from around the world. The map included here shows the locations of viewers of my president's talk. Although I was nervous, I enjoyed sharing my thoughts with you! In case you missed it, you can view the recorded plenary sessions at <https://bit.ly/32SZaMC>.

Number 1: Opportunity to Serve During a Challenging Time

I have benefitted substantially from the ASA community. I am grateful to have had opportunities to give back in small ways. I know all of you are also supporting our profession, our communities, and our families ... so thank you. I truly am looking forward to the next part of my ASA journey. It has been an honor to serve as the president of the ASA.

Wesley L. Madry



ASA/AAAS Mass Media Fellowship Applications Open

Applications for the ASA/AAAS Mass Media Fellowship will be accepted until January 1, 2021. Successful candidates will spend 10 weeks next summer working with journalists at a TV, radio, magazine, or newspaper outlet putting their statistics skills to use.

“One of the most valuable aspects of this work was that, in writing about statistics, I became introspective about my own academic research,” wrote Irineo Cabrerros, a 2018 mass media fellow. “My experience this summer hooked me. I left *Slate* flush with inspiration for future projects and hungry to keep going. I began the summer as a dabbler in science communication. Now, I don’t think I can imagine a future without journalism being part of it.”

Embedded in media outlets, fellows learn how to communicate

MORE ONLINE
Read about the ASA sponsorship of this fellowship at <https://bit.ly/3pmMPdx>.

Past ASA/AAAS Mass Media Fellows

2020: Jess Craig, NPR, <https://bit.ly/2UfuzV7>

2019: Diana Cai, *STAT News*, <https://bit.ly/32CvPWS>

2018: Irineo Cabrerros, *Slate*, <https://bit.ly/2UkW2oq>

2017: Nick Thieme, *Slate*, <https://bit.ly/2JUcGJj>

scientific topics in clear and engaging ways, better understand how the media covers science, and build a professional network of scientists and journalists. In its 45-year history, the program has supported more than 700 fellows.

Learn more about being a AAAS Mass Media Fellow at <https://bit.ly/3eUaCMU>.

To apply, visit <https://bit.ly/35mTWdM>. Questions may be sent to ASA Senior Advisor for

Nominate a Colleague for ASA Leadership Position

Nominations are being sought for ASA president-elect and vice president candidates for the 2022 election. While the 2021 elections have yet to be held, the Committee on Nominations needs time to evaluate recommendations 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 when 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 will be selected from industry and the vice president will be selected from government. 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 2023 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, 2021.

Statistics Communication and Media Innovation Regina Nuzzo at regina@amstat.org. ■

CHANCE HIGHLIGHTS

Special Issue Illustrates Importance of Data Privacy

Amanda Peterson-Plunkett, *CHANCE* Executive Editor



Amanda Peterson-Plunkett

MORE ONLINE
Read the article by Arvind Narayanan and Vitaly Shmatikov about Netflix's privacy issues at <https://bit.ly/3pnkBiU>.

In 2006, Netflix hosted a data competition aimed at improving their movie recommendation system. The winners were awarded \$1 million in 2009 for a model that offered more than 10 percent improvement over the company's own recommendation model. Netflix planned to host a follow-up competition but reversed the decision in 2010 after a class-action lawsuit (*Doe v. Netflix*) was filed against them alleging privacy law violations concerning the data set publicized for the original competition.

Two years earlier in 2008, researchers at The University of Texas at Austin, Arvind Narayanan and Vitaly Shmatikov, showed that it was possible to identify specific customers in the competition data set (suggesting even political and religious affiliations could be determined), even though Netflix had performed a form of cursory anonymization.

The Netflix example illustrates the importance of preserving confidentiality when sharing data sets. In the most recent issue of *CHANCE*, a special issue, authors focus on statistical data privacy and confidentiality. The issue also features three guest editors:

Saki Kinney, senior research statistician at RTI International

Fang Liu, professor and director of graduate studies in applied and computational mathematics and statistics at the University of Notre Dame, senior editorial board member for *BMC Medical Research Methodology*, and co-editor of *CHANCE*'s O Privacy, Where Art Thou? column

Aleksandra Slavkovic, professor of statistics with appointments in the departments of statistics and public health sciences and the Institute for Computational and Data Sciences at Penn



State University, associate editor of the *Annals of Applied Statistics* and *Journal of Privacy and Confidentiality*, and co-editor of *CHANCE*'s O Privacy, Where Art Thou? column.

In columns, we turn to teaching and sports. In the Teaching Statistics in the Health Sciences column, **Erin Blankenship** and **Ella Burnham** share their online teaching experiences, a topic many teachers can relate to during the COVID-19 pandemic. In Taking a Chance in the Classroom, **Evangeline Reynolds** explains how to create engaging assignments using flipbooks, demonstrating the method using the R flipbookr package. Finally, in Beyond the Box Score, **Christopher Bilder** discusses the flagstick dilemma in golf: whether to leave the flag in or out of the hole.

As an ASA member, you can view the online version of *CHANCE* for free by logging into your ASA account at www.amstat.org and looking under My Publications.

Would you like to write an article for *CHANCE*? Submission instructions and writing tips can be found at <https://bit.ly/3plyBob>. ■

Nominations Sought for *JABES* Editor

The International Biometric Society and American Statistical Association invite nominations for editor of the *Journal of Agricultural, Biological, and Environmental Statistics (JABES)*.

JABES publishes articles of immediate and practical value to applied researchers and statistical consultants in the agricultural sciences, biological sciences (including biotechnology), and environmental sciences (including those dealing with natural resources).

JABES is published quarterly by Springer in March, June, September, and December. The editor reviews new submissions and sends selected papers to associate editors, who also review the papers and either send a response to the editor or the paper to referees for in-depth reviews. Springer's editorial tracking system is used for online submissions and the peer review process. Funds are provided for editorial staff support and office supplies.

The editor also works with Springer's production editor to create each issue and ensure timely production and publication.

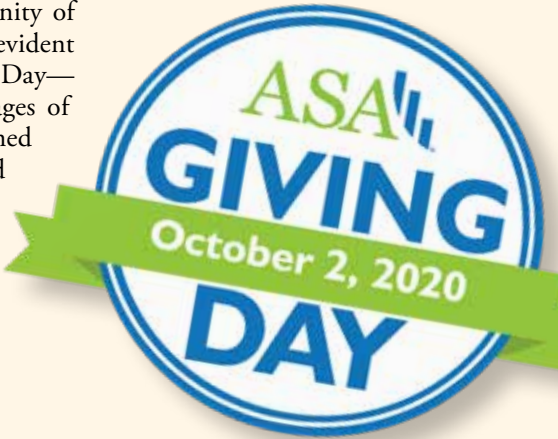
JABES receives approximately 220 submissions a year.

Additional duties of the editor include writing a quarterly report for the IBS *Biometric Bulletin*, overseeing the selection of best papers in *JABES*,

Giving Day 2020 Raises Nearly \$69,000

Amanda Malloy, ASA Director of Development

The ASA is a strong community of caring individuals. This was evident on October 2—ASA Giving Day—when members posted messages of hope and encouragement, signed up to volunteer, and donated nearly \$69,000 in support of ASA programs.



ASA Giving Day Chapter Challenge Winners

Region 1 – Washington Statistical Society

Region 2 – Chicago Chapter

Region 3 – San Francisco Bay Area Chapter

ASA Giving Day University Challenge Winner

Kansas State University

Thanks to the generosity and volunteer service of so many members, the

ASA will continue to provide teachers innovative resources to engage their students, help the public better understand the data that surrounds them, advocate for sound policymaking, and cultivate future leaders in statistics and data science.

To learn more about what donations can do, visit www.amstat.org/giving.

organizing the *JABES* Showcase session at the IBC and JSM, and reporting to the IBS Executive Board on impact factors and other issues of importance.

The next editor will serve a three-year term, from 2022 through 2025, with the transition beginning in 2021.

JABES is committed to building diversity in leadership positions in our discipline and, as such, all qualified applicants are

encouraged to apply and will be given equal consideration irrespective of race, gender identity or expression, age, or nationality.

Nominations should be sent to JABES@biometricsociety.org no later than January 15, 2021. Once received, nominations will be presented to the chair of the *JABES* Management Committee for further consideration. Interested individuals are encouraged to nominate themselves. ■

An Interview with Margaret



Margaret Gamalo was recently appointed as the editor in chief of the *Journal of Biopharmaceutical Statistics (JBS)*.

Yodit Seifu, Victoria Chang, and Junjing Lin,
ASA Biopharmaceutical Section

Margaret (Meg) Gamalo is senior director – biostatistics, global product development – inflammation and immunology at Pfizer Innovative Health. She combines expertise in biostatistics, regulatory, and adult and pediatric drug development. Previously, she was a research adviser of global statistical sciences at Eli Lilly, where she helped secure the approval of baricitinib as the first modern treatment for atopic dermatitis and position baricitinib as a first-in-indication treatment for alopecia areata. Gamalo also helped in the clinical trials for baricitinib as a treatment for COVID-19.

Prior to working at Lilly, Gamalo was a mathematical statistician for the Center for Drug Evaluation and Research at the US Food and Drug Administration supporting regulatory reviews of drugs in the infectious diseases and ophthalmology therapeutic areas. She is an expert in pediatric extrapolation and leads the Pediatric Innovation Task Force at the Biotechnology Innovation Organization. On this task force, she heads a cross-functional think tank on why

extrapolation needs to be a default strategy in pediatric drug development.

Gamalo is also an active member of the European Forum for Good Clinical Practice – Children’s Medicine Working Party, working to establish decision criteria for the inclusion of adolescents in adult research.

In the statistics profession, Gamalo is a member of the executive committee of the Biopharmaceutical Section and has served in multiple administrative and scientific capacities within the section since 2014. She enjoys writing and mentors a group of statisticians in research activities on topics related to Bayesian methods, evidence synthesis, causal estimation for RWD/RWE, and policy-oriented work on pediatric drug development.

BIOP Report: Congratulations on your recent appointment as the editor-in-chief of the *Journal of Biopharmaceutical Statistics (JBS)*. What is your vision on its mission, history, and current status?

MG: *The Journal of Biopharmaceutical Statistics (JBS)* has been around for about three decades. It started back in the early 1990s and, since that time, you can see how the industry has evolved over the years told through the collective perspective of statisticians. It is fascinating to study the progression of scientific research published in the journal reflecting both the scientific and evolving landscape of drug development. For example, the first two decades exhibited statistical issues ranging from proper use of one-sided vs. two-sided tests in hypothesis testing, appropriate analysis for stability and expiry, bioequivalence, noninferiority and superiority, subgroups and multicenter trials, interim analysis and adaptive designs, multiplicity, linear models analysis of endpoints, meta-analysis, among others for which the journal has provided the stage for consensus and application.

Since then, the journal has seen a transformation in scientific topics influenced by shifts in research and development and the growing number of stakeholders. For example, a big trend has been the move to a more patient-centric health care model, closely followed by the impact that technology has on all areas of the life sciences and the changing business models. Most recently, many of the published manuscripts revolve on topics such as efficient trial designs, including the use of external data, estimation and uncertainty for go-no-go decisions, finding optimal individualized treatment rules or biomarker-guided treatments, treatment heterogeneity, and considerations for regional and payer evaluation of multi-regional clinical trials, among others. Some proposed

Gamalo, Editor of *JBS*

solutions apply an agile, iterative test-and-learn approach, rather than running long and expensive development processes to concoct the perfect solution. Other solutions often require modern technological innovation such as artificial intelligence (AI) and machine learning (ML), which provide significant opportunities to enhance drug discovery, clinical development, and commercialization.

When I wrote my editorial in December 2019 in time for the first issue under my editorship, I pondered the role of scientific publishing in an evolving industry. I realized that while our problems and insights today are much different from when the journal was first envisioned, not much has changed in terms of its vision and mission. The journal remains committed to the principle that better education of statisticians enables informed debate and decision-making about the valid application of new methodologies and aids in addressing misuse of statistical concepts (e.g., p -values) for scientific discoveries.

The journal will continue to strive to achieve excellence by publishing articles that present important new advances in an everchanging field of statistics within the pharmaceutical industry. *JBS* will always be a platform for education and dissemination of statistical research and innovation, a repository for statistical solutions and choices, and a forum for scientific opinion on issues impacting methodology and applications in the pharmaceutical industry.

BIOP Report: There are several statistical journals with a focus on statistics issues in drug development and many more with a broad focus on medical statistics and biostatistics. In your mind, what are the competing journals for *JBS*? What is your view on the relationship between *JBS* and these competing journals? What kind of journal would you like to see *JBS* become in the next few years?

MG: There are two ways of thinking about the existence of other journals (i.e., whether to look at them as competitors or whether their existence complements the journal and enlarges the collective influence of statistics in the biopharmaceutical industry by broadening readership and impact of scientific publication). I prefer the latter, embracing the perspective of *abundance* (i.e., there is an abundance of scientific thought and research material for everyone). This, I think, is the better long-term strategy for scientific publication and consistent with how science has evolved throughout history.

While Galileo Galilei may have stated, “In questions of science, the authority of a thousand is not

worth the humble reasoning of a single individual.” we all know science is also strengthened through constant validation—the reproducibility of results, the conduct of peer-reviewed, open literature research. Hence, the existence of other journals is also essential for quality scientific and statistical research.

Furthermore, science and statistics moves and grows with collaboration. There is more and more to know in the world, and one can only have so much in our heads. In fact, the share of stuff we know as individuals is declining in any field. Inevitably, we need to collaborate as most research problems require multiple kinds of expertise.

Collaboration in science and statistics is good for making bold advances (i.e., innovation). Interaction with people with different perspectives or approaches prevents us from getting tunnel vision. Hence, one objective in scientific publishing should be to collectively grow the biopharmaceutical statistics field together through a feedback loop of continuous scientific and statistical innovation.

Of note, innovation is key because it is multiplicative, meaning that the same input generates greater output far beyond the biopharmaceutical statistics field. The real problem, then, in scientific publication is sustaining statistical innovation, which I believe is anchored on drivers of innovation (i.e., problems, constraints, and opportunities).

While the biopharmaceutical industry may be a mature field with established and highly regulated scientific and statistical problems, our problems can be unique given the interface of different stakeholders (e.g., payor, regulator, patients, physicians, pharmaceutical companies). Capitalizing on this uniqueness to formulate innovative scientific and statistical solutions could have far-reaching implications on other fields.

With this paradigm in mind, the journal will strive to promote multidisciplinary collaborative research as a logical response to the expanse and pace of scientific revolution and transformation of the field. Not one discipline will be able to integrate all aspects of any problem or issue of interest alone with proper applicability and sufficient viability or competitiveness across a multi-stakeholder industry. Increased focus on statistical research that has good cross-functional appeal apart from just pure statistical interest is important. The journal believes that effective science is achieved not just by one discipline, but by the collaborative and multidisciplinary effort within the entire biopharmaceutical field.

MORE ONLINE
To read the entire fall issue of the *Biopharm Report*, visit <https://bit.ly/35p44my>.

Science and statistics will not meet its potential until the research culture enables and supports contributors from all backgrounds and circumstances and contributions of all kinds based on the interests, skills, and resources available.

BIOP Report: What are the new measures you are taking to continue improving the quality and visibility of the journal and make it truly impactful?

MG: One of the initiatives I instituted when I assumed the role of editor-in-chief was to ensure diversity in the editorial board. We have increased the number of women associate editors (AEs), and currently there is a diverse pool of AEs representing pharmaceutical companies, academia, and regulatory agencies from various geographies. I realized that a journal relies on multiple and varied voices having a wide range of experiences. In fact, a diverse and inclusive editorial board brings the different perspectives a journal needs to ensure quality and unleash value-driving insights, methods, and practices. Another consequence of a diverse pool of AEs is having a network to a broader pool of peer reviewers who are much more engaged.

We screen papers for appropriateness to be published in the journal (i.e., papers that fit the aims and goal of the journal). We identify novel methods and applications and aspire to ensure relevance of topics while maintaining scientific integrity. We also plan special issues to address questions or bring up more discussion about new and hot topics and weave manuscripts coherently through different viewpoints or perspectives.

Finally, we rely on our reviewers to provide quality scientific and statistical reviews.

Diversity and inclusion must happen, even in scientific publishing. Science and statistics will not meet its potential until the research culture enables and supports contributors from all backgrounds and circumstances and contributions of all kinds based on the interests, skills, and resources available. Failure to achieve diversity and inclusion of all stakeholders in science and statistics will slow progress in discovery and translation of knowledge to solving humanity's most pressing problems.

Another initiative we are accessing currently is to harness the power of the crowd by highlighting key innovations or discussions in social media. I think as a leader in scientific publication, we need to be more proactive in disseminating information than merely passive repositories of scientific thinking brought to use through a Google search. It is estimated that ~68% of Americans get their news from social media (see <https://pewrsr.ch/3pitBpb>).

The ease of use of social media platforms for communicating and disseminating information also makes them attractive to scientists. Furthermore, I believe social media gives us the opportunity to engage directly with a wide range of audiences and helps us understand our readers.

Within the next five years, we have several other initiatives planned, as well (e.g., partnering with a statistics professional organization on proceedings or narrowing the proceedings on hot topics or breakthroughs). There will be a few more changes along the way as we try to think about what the role of scientific publishing in a personalized information age means. How can we adapt to that environment and perhaps influence it as well, particularly in biopharmaceutical statistics? I am open to suggestions, and anyone is free to reach out with ideas on how we can improve.

BIOP Report: JBS has successfully published several special issues in the past and attracted much attention. Do you plan to publish more special issues in the coming years, and what are the topics of these special issues?

MG: We recently launched a call for papers for special issues on real-world data/evidence (RWD/RWE) and in the implementation of estimands in clinical research. RWD/RWE is a growing area that still requires thought and consensus on how it can be applied, given the range of possibilities. In the future, there will be a blurring of how evidence of effectiveness of investigational new drugs will be established. Moreover, this field will continue to grow in the next decade, finding interconnections with clinical trials, clinical practice through electronic health records, and digital health.

Estimands, on the other hand, is a complex issue that is quite difficult to explore upfront and implement in the planning stage of a clinical trial. However, currently, it is changing the way we design trials, write the objectives, collect the data, conduct the trial, and perform analysis because the framework requires us to be more unambiguous about the questions we would like to answer. The complexity is also due to the presence of multiple scientific questions of interest about relevant treatment effects, interpretation of study results, and added value of drugs to different stakeholders (i.e., regulatory, prescribers, patients, and payers).

Our guest editors are busy connecting with key scientific leaders in this field, as well as disseminating the effort through different social media venues. What we believe to be important is to have a balanced and informative issue that will serve as a definitive reference for these topics to many scientists and statisticians in our field.

For these special issues, the reviews will be rolling (i.e., once the reviews are completed, the accepted manuscript will be posted on the webpage right away for access). Once a sufficient number of manuscripts is collected and reviewed, we will close the issue and publish it in print. I urge those who are interested to reach out to Junjing Lin (Takeda), Helen Qi (Bristol Myers Squibb), Yodit Seifu (Merck), or Bill Wang (Merck).

We will also launch another special issue on pediatrics very soon. Of note, the majority of the investigational drugs being studied in adults will [be studied in] pediatric patients, as well—either through a requirement or in pursuit of an incentive. The challenges of running trials in children are accelerating efforts in innovative trial design and analysis. We hope this special issue will provide a simple but comprehensive guide for statisticians/clinical research scientists to determine the extent of development in a pediatric trial in accordance with the principles of extrapolation and how these trials can be streamlined to be as lean as possible to ensure they provide the maximum information with the minimum number of pediatric patients exposed to research risk.

We are trying to have this special issue coincide with a global virtual workshop on extrapolation in pediatric drug development. This workshop and subsequent special is still in the planning stages, but will focus on statisticians' and clinicians' experiences in pediatric drug development.

BIOP Report: As far as we know, many statistical journals are facing challenges in finding highly qualified reviewers to complete reviews in a short timeframe—say one and a half months. What do you think *JBS* can do to address issues such as delayed manuscript review?

MG: Indeed, this is a big problem in scientific publishing. Our managing editor, Victoria Chang (BeiGene), has been excellent in reminding AEs when the reviews are needed. We have been able to manage asking the reviewers to actively turn in their reviews. Of course, there are some review slips here and there as this is all voluntary work. For special issues, we ask the guest editors to have their own system of ensuring expedient reviews by having a standby review committee.

As I have mentioned earlier, having a diverse set of associate editors has been very helpful. We still

Biopharmaceutical Report Focuses on Statistical Issues in COVID-19 Trials

The *Biopharmaceutical Report* editorial team invited authors from government, industry, and academia to write articles about their perspectives on the impact of COVID-19 on clinical trials, particularly the statistical issues involved in designing new COVID-19 trials. The 2020 fall issue includes these articles.

Steve Wolf of Duke University, Peter Mesenbrink of Novartis, Herbert Pang of Genentech, and Xiaofei Wang of Duke University report a survey of COVID-19–related clinical trials based on the data extracted from [Clinicaltrials.gov](https://clinicaltrials.gov) as of early October 2020. The article sets the stage for discussion about the status of and possible future design and statistical analysis issues in developing a safe and effective vaccine and treatments for COVID-19.

Zachary McCaw of Google, Lu Tian of Stanford, and Lee-Jen Wei of Harvard summarize recent work about how to quantify treatment effect and competing risk in COVID-19 clinical trials.

Peter Mesenbrink of Novartis shares his experience designing several COVID-19 trials.

Mitchell Thomann, Michael Durante, and Paul Berg of Eli Lilly write about simulation studies they conducted to gain insight into choosing optimal study endpoints in a proof-of-concept trial.

Sheng Feng, Amanda Shield, and Andy Wilson of Parexel contribute a short article about the challenges and possible solutions of conducting real-world evidence studies on COVID-19 treatment.

An article by Yongming Qu and Ilya Lipkovich of Eli Lilly provides a comprehensive review of estimands and estimation of treatment effect of clinical trials during COVID-19 in the context of ICH E9.

In this issue, there is also an interview with Margaret Gamalo, the new editor for the *Journal of Biopharmaceutical Statistics*, and a summary report from Statistical Methods in Oncology Scientific Working Group on type I error considerations in master protocols.

View the latest issue of the *Biopharmaceutical Report* at <https://bit.ly/35p44my>.

have plans to expand our editorial board with folks from the European Union and Asia. In fact, if you have an interest in serving as an AE and you have the passion to provide service to biopharmaceutical statistics and the society, please reach out to us.

We also encourage young scientists to take part in this endeavor actively. It does not require that one must be well experienced to serve as a reviewer. I think the major criteria to be a good reviewer are curiosity, critical thinking, and the ability to ask good questions.

I am aware that many of us will say we are eye-balls deep with work. On the other hand, I argue that we need to take care of ourselves, as well. One way of doing that is ensuring we retain our scientific and statistical thinking and keeping up to date on innovation and new statistical techniques. I always am reminded that we may need to keep learning if we want to be relevant and as we live longer. Perhaps Mahatma Gandhi was right in saying that we need to “learn as if you were to live forever.”

BIOP Report: Do you have any advice for the statisticians who would like to submit manuscripts to JBS?

MG: My general advice to all statisticians, and not just to those who would like to submit manuscripts, is be curious and tell a good story. Most breakthrough discoveries started with curiosity—the impulse to seek new information and experiences and explore novel possibilities. Curiosity is beneficial for all because it cultivates many levels, whether it is one’s organization or, more broadly, the society. In fact, curiosity helps society make better decisions. When we are curious, we think deeply and rationally about decisions and come up with more creative solutions.

Curiosity does not necessarily have to result in a monumental breakthrough, and certainly publishing in a scientific journal does not necessarily mean only novel solutions are entertained. Science moves by increments, not by leaps and bounds. Sometimes, the insight to the problem is enough.

What I also see as a problem is that there are times when statisticians hold back on their ideas, fearing that they may be too obvious. I think great ideas may sometimes seem obvious because the solution has all the parts of the question lining up and shedding light on a solution. Therefore, ‘obvious’ answers are not visible to most people, partly because most people are not thinking about the question. Ideas only come to those who recognize a problem and look for innovative solutions. I posit that even Einstein could possibly not find a solution if he had the wrong question.

Inside every scientific discovery, there is a good story. I think it is important to share that story, as I am sure there are a lot of insights that went through (e.g., how the problem came about, why it is an important problem to pursue, how the solution was discovered, why other solutions failed). These experiences are actually very informative and could help many researchers out there know or understand what works and what does not.

Brilliant statisticians may sometimes be dissuaded by writing not because they do not know how to write but by not trying. *We are our own limit.* We need to believe that something different can happen in order to break old patterns, and we can choose that new outlook at any time. Part of being an effective statistician is not only to develop or apply sophisticated numerical calculations, but also being an effective communicator in writing and in speaking.

BIOP Report: As we know, you had extensive working experience in government and the pharmaceutical industry. What is the impact of this unique experience on your perspectives on the role of statistics and statisticians in clinical trials research?

MG: I learned the principles of drug development at the FDA, and I learned how to apply them while understanding the challenges of drug development in industry. I realized many of the regulations in clinical trials are common sense and centered on ensuring the safety of patients. Having reviewed hundreds of investigational new drugs (INDs) and new drug applications (NDAs), what is the right thing to do is sometimes very easy to spot because it is rational. I can also see the difficulty with implementing mitigations from the industry side for some of the concerns raised by regulatory agencies.

I learned to assess what is ideal and what is applicable. In the case of the latter, there is no perfect solution most of the time, but the quality of the medicinal product and patient safety are paramount. Hence, when I think about my job responsibilities and the role of a statistician in the biopharmaceutical industry, it may just be encapsulated by the provisions of Title 21 of the Code of Federal Regulations, which is consistent with *ensuring good clinical practice*. Of note, good clinical practice recognizes that protecting data integrity is part and parcel of *ensuring safety of patients*.

More broadly, I think *statisticians need to be involved as key decision-makers*. When we can understand and interpret data correctly, our ability to identify crucial areas requiring attention in drug development are enhanced and our proposals for mitigating these key areas are likely to respond to the needs of our organization or the industry. In an age where data is essential for making big decisions, whether in business or government, statisticians need to be at the table so we can assist and encourage informed decision-making.

However, this also entails that we need to be able to communicate in the language that is understandable by nonstatisticians. Statisticians may need to be comfortable communicating about the problem not just in terms of numbers. We need to understand the whole problem and

not just numerical ramifications (e.g., scientific, clinical, regulatory, payor, etc.) Having a holistic view is what we need, so we can provide more valuable and insightful feedback.

My experience on both sides of the industry (regulatory and pharma) has also shaped my collaboration with many statisticians in the industry. I have been more discerning on what topics are most impactful, and so I think *statisticians need to influence scientific thinking and progress* in the biopharmaceutical industry. Particularly, I learned how to *think big, start small, and learn fast*—our role in the industry is to have a broad vision while being mindful of how we act on it.

For more than five years, I have been using a great deal of Bayesian methodology. However, I realized that most sample sizes are driven by the number of exposures needed to have sufficient data to establish safety. Hence the value of Bayesian methodology in terms of efficiency in late phases of development may not be apparent to encourage a strong push for change. However, in areas of unmet need and in pediatrics, the use of Bayesian methodology is clear because of feasibility and because of ethical principles of not having duplicative information to warrant translating conclusions from one population to another. That situation gave me a better perspective to focus on what innovative advances can bring meaningful change in policy. In fact, most of these innovative methods have been expanded to applications of propensity scoring methods to augment clinical trials, particularly in pediatrics, orphan diseases, and unmet medical need indications. So even in scientific research and policy, the words of Justice Ruth Bader-Ginsburg reverberate: “Real change, enduring change, happens one step at a time.”

BIOP Report: The COVID-19 pandemic is having a significant and long-lasting impact on how clinical trials are conducted. Meanwhile, government, universities, and many pharmaceutical companies are working together to find vaccines and new treatments for this disease. Do you have a plan to use the journal as a venue to promote the discussion on challenging issues arising in clinical trial designs and analyses?

MG: *Statistics in Biopharmaceutical Research (SBR)* is already having a series of special issues on the impact of COVID-19 on clinical trials and in COVID-19–related research. Some of my friends and colleagues are already working hard on that area and I am amazed at the speed of coordination and implementation. Two of the manuscripts I have been involved in writing will be published in that endeavor.

My general advice to all statisticians, and not just to those who would like to submit manuscripts, is be curious and tell a good story.

Consistent with the spirit of collaboration I mentioned previously, I decided not to go with another special issue on COVID-19 in *JBS* because it would then be in competition with the SBR effort. Instead, any COVID-19–related research identified as helpful to the scientific community or related research activities will be given priority and expedited review. This allows us to publish any research and findings with greater speed and agility.

The main issue with developing drugs for COVID-19 is speed of innovation. However, many of the tools for acceleration have been discussed extensively in literature (e.g., adaptive design, data sharing, etc.) What is lacking, from a statistical perspective, is on knowledge of appropriate endpoints in relation to patient population. Hence, COVID-19 disease progression models are needed to learn about how to conduct COVID-19 treatment clinical trials. Ensuring clinical trials have a common set of data that can help inform other development is also important. However, there is little data available to assess how this can impact speed of development. The best would be when data is already out there, what can we learn from it so we can be better prepared should there be another catastrophic event of similar nature in the future?

I do encourage statisticians to contribute to the scientific efforts for developing treatments for COVID-19. I think it is a worthwhile endeavor and reminds us how interconnected we are. If we do not collaborate, we will be in this situation for a long time.

I believe this is the best time for science and statistics. In fact, as I have mentioned previously, with uncertainty comes great innovation. Problems and constraints are backdrops for opportunity. As a cheery reminder, Sir Isaac Newton produced an unbelievable number of exceptional results, including seminal experiments on the law of universal gravitation, while quarantined during the London plague of 1665–1666 (see <https://bit.ly/2IjhnMB>), though I believe he must have been curious and persistent even before that. ■

IMSI: A New NSF-Funded Institute

The Institute for Mathematical and Statistical Innovation (IMSI) is a new mathematical sciences research institute funded by the National Science Foundation (NSF). This institute is located at The University of Chicago and managed in partnership with Northwestern University, the University of Illinois at Chicago, and the University of Illinois at Urbana-Champaign. It is the newest member of the portfolio of institutes funded by the Division of Mathematical Sciences, joining the American Institute of Mathematics (AIM), School of Mathematics at the Institute for Advanced Study (IAS), Institute for Computational and Experimental Research in Mathematics (ICERM), Institute for Pure and Applied Mathematics (IPAM), Mathematical Sciences Research Institute (MSRI), and Statistical and Applied Mathematical Sciences Institute (SAMS).

The mission of IMSI is to apply rigorous mathematics and statistics to urgent, complex scientific and societal problems and to spur transformational change in the mathematical sciences and mathematical sciences community.

A distinctive feature of the new institute is the organization of programs around longer-term scientific themes in key areas of application, with the application areas driving new mathematics and statistics. The aim is to enable sustained, ongoing advances in both the substantive area and mathematical sciences.

The ASA community is acutely aware that interactions with other disciplines have enriched and strengthened the core mathematical science disciplines. Furthermore, many are involved in application areas that pose novel challenges to the mathematical sciences. IMSI intends to accelerate progress on these problems by bringing together powerful teams of cross-disciplinary researchers for focused efforts to advance both the application and our field. Participation of ASA members in IMSI programs will be crucial to success in these endeavors.

The focus on applications is driven by an understanding that the mathematical sciences are woven inextricably into the fabric of the wider enterprise of research, science, and technology. If

Upcoming IMSI Workshops

Mathematical and Computational Materials Science (February 15–19), <https://bit.ly/3eRZOii>

Confronting Climate Change (March 1–5), <https://bit.ly/3kxtGly>

The Multifaceted Complexity of Machine Learning (April 12–16), <https://bit.ly/3nh4j9c>

Topological Data Analysis (April 26–30), <https://bit.ly/2lyZitP>

Verification, Validation, and Uncertainty Quantification Across Disciplines (May 10–14), <https://bit.ly/3eVshDP>

Decision Making in Health and Medical Care: Modeling and Optimization (May 17–21), <https://bit.ly/2lIZGvT>

Quantum Information for Mathematics, Economics, and Statistics (May 24–28), <https://bit.ly/3eVaDjM>

Eliciting Structure in Genomics Data (August 30 – September 3), <https://bit.ly/3kyQSjn>

the mathematical sciences are to thrive, they must do so as part of that wider enterprise.

While mathematical tools and insights have always been crucial to research in other disciplines, their usefulness has been broadening and intensifying. The National Academies' report *The Mathematical Sciences in 2025* noted the mathematical sciences are becoming "an increasingly integral and essential component of a growing array of areas of investigation" and went on to argue that "the mathematical sciences have an exciting opportunity to solidify their role as a linchpin of twenty-first century research and technology" through a transformation into a discipline

Kevin Corlette is a professor in the department of mathematics at The University of Chicago and the director of IMSI.

Douglas Simpson is a professor in the department of statistics and the Beckman Institute for Advanced Science and Technology at the University of Illinois at Urbana-Champaign and is associate director of IMSI.

Panagiotis Souganidis is a professor in the department of mathematics and a member of the Committee on Computational and Applied Mathematics at The University of Chicago. He is the scientific adviser at IMSI.

with “much broader reach and greater potential impact.” IMSI aims to be a catalyst for this kind of transformation of the mathematical sciences.

An important dimension of the potential impact of the mathematical sciences is its capacity to bring insight to challenges that arise, often with urgency, for society. Examples include the problem of modeling the spread of COVID-19 and its interactions with social distancing policies, the economy, and various forms of infrastructure; the problem of modeling climate and the effects of climate change on the conditions that make life on earth possible; and the power of ideas and techniques from artificial intelligence and machine learning to transform human society, both for good and ill.

These are challenges in which the mathematical sciences can make a difference and which, in many cases, demand all hands on deck. Responding to these challenges is an essential part of realizing the full potential impact of the mathematical sciences. It is also crucial to the health and diversity of the mathematical sciences community: We are less likely to attract new talent to the field if the field remains on the sidelines in the face of urgent challenges.

This last point highlights another element of the mission: the transformation of the mathematical sciences community. *The Mathematical Sciences in 2025* pointed to benefits that would accrue to the mathematical sciences if more of its practitioners had an understanding of the general landscape of the mathematical sciences beyond their areas of expertise, the ability to communicate and collaborate across disciplinary boundaries, a better understanding of the role of the mathematical sciences in other disciplines, and more experience with computation. IMSI aims to offer researchers opportunities to develop these qualities more fully and thereby catalyze the development of a new breed of interdisciplinary mathematical scientist through boot camps, internships, research programs of various lengths, and training in communication across disciplines.

The long-term scientific themes will evolve over time, but only on relatively long timescales of a decade or more. There are six initial themes for IMSI: climate science, data and information, health and medical care, materials science, quantum computing and information, and uncertainty quantification.

While mathematical tools and insights have always been crucial to research in other disciplines, their usefulness has been broadening and intensifying.

Scientific activity at IMSI will take a variety of forms, including the following:

- Long programs, typically three months in length, which bring a large interdisciplinary group of researchers together for a period of sustained focus on an area that seems ripe for progress
- Workshops, either standalone or attached to a long program, of up to a week in length
- Interdisciplinary research clusters in which small interdisciplinary teams collaborate on promising projects
- Research collaboration workshops in which teams of senior and junior researchers work on problems over several months, with the work brought to completion in a concluding workshop


These activities are expected to fall within the scope of IMSI’s scientific themes, except for possibly standalone workshops, which can be used to explore a wider range of territory.

This year is a ramp-up year for IMSI, and the research activity will primarily take the form of workshops. We expect to host (either virtually or in person) eight workshops.

We plan to follow what we expect will be a more typical schedule in 2021–2022 with long programs—Distributed Solutions to Complex Societal Problems in the fall and Decision Making and Uncertainty in the spring. Applications for participation in these programs, as well as for associated tutorial programs in the summer of 2021, are open. ■

MORE ONLINE
Visit the IMSI website at www.imsi.institute for more information about the workshops, special events, and institute.





Everyone loves a good story, which is why we're thrilled to launch a series featuring ASA members who share theirs. Be inspired by their diverse experiences, meaningful connections, and the personal and professional rewards derived from their engagement with the ASA.

Our mission is to collect authentic and meaningful accounts of member experiences. If you have a story you would like to share, email the ASA's marketing and communications coordinator, Kim Gilliam, at kim@amstat.org.


ELIZABETH MANNSHARDT *Statistician*

"The ASA has provided many opportunities within my own career, including the chance to develop skills beyond the role of traditional statistician."



Development's JSM 2019 guided networking session, it was fun to talk with newer ASA members about building professional connections.

Elizabeth Mannshardt is an associate director of the Information Access and Analytic Services Division of the US Environmental Protection Agency.



I became involved with the ASA as a graduate student and have found that, as my career path has developed, I have been able to shift my focus within the ASA and at events such as JSM. My current position, associate director of the Information Access and Analytic Services Division of the US Environmental Protection Agency, is more on the IT side of data science than my previous roles as a traditional statistician. The ASA has a broad array of offerings across different paths in statistics and data science, which have served me well in my own journey.

I appreciate that the breadth of the JSM program goes beyond methodology and theory sessions. The women in statistics panels at JSM 2019 and 2020 featured amazing statisticians with so many interesting insights, including Suzanne Thornton's STRR for advocacy—speak, trust, recognize, read—and Wendy Martinez's perspective on women in leadership guiding others. I also enjoyed the discussions "Communication in Statistical Science" and "The Juggling Collaborator: Which Balls to Drop," as well as Regina Nuzzo's session, "Communicating to the Masses." At the Committee on Career

It has been a rewarding experience to work with the ASA on developing initiatives that have proven key in current times.

Of great importance to me is providing opportunities for students and young professionals. Working with the ASA's North Carolina Chapter, we generally approached the organizational process asking, "What did I wish I knew when I was starting out?" NC ASA's Mentoring and Early Career Development Workshop (see <https://bit.ly/2UnZY7S>) featured topics such as how to be more successful, presenting best practices, leadership, and building a career. It was exciting to hear participants express how the workshop helped them begin thinking about their goals in a new way and covered concepts that matter throughout one's career. I learned quite a bit myself!

It is also important to me to illustrate to those starting out that there are many paths to success. A question posed during an NC ASA speed mentoring event revealed that each professional's career has had unexpected twists along the way. The look of surprised relief among participants learning that successful professionals aren't always offered jobs and sometimes have their papers rejected will always stay with me.



Elizabeth Mannshardt says she was glad the ASA North Carolina Chapter's 2018 speed mentoring event revealed that each professional's career has unexpected twists along the way and there are many paths to success.

As I joined the executive board of the Government Statistics Section (GSS), an important initiative was to create more opportunities for young professionals and others who might not have resources to travel to events like JSM. In 2019, GSS held a mentoring roundtable at JSM and recently launched a larger mentoring program (see <https://bit.ly/31DcUTh>). The importance of these connections was expressed by mentee Nancy Murray: "They were all personable and shared their more human aspects of their stories." Additionally, GSS, the Social Statistics Section, and the ASA Professional Development program launched a virtual workshop series (see <https://bit.ly/3kkb2xi>). It has been a rewarding experience to work with the

ASA on developing initiatives that have proven key in current times.

The ASA has provided many opportunities within my own career, including the chance to develop skills beyond the role of traditional statistician. Experiences gained running an executive board provided key points in my recent interview for my management position. But the most important and rewarding aspect has been the people I have had the opportunity to meet and the amazing colleagues with whom I have been so fortunate to work. Emily Griffith, Jenny Thompson, and Donna LaLonde are just a few of those who have served to make the ASA an incredible community. I look forward to meeting so many more!

CLAIRE MCKAY BOWEN *Data Scientist*



"I want to 'pay it forward' to the ASA community that provided so much for me."

At the beginning of September, I was asked to tell a story about why I joined the ASA and chose to become more active. I was also asked to share a specific story about an association experience I found most interesting. For weeks, I struggled to figure out what specific story I wanted to tell.

Do I describe how I met Jeri Mulrow during a mentoring event at a Joint Statistical Meetings (JSM) conference and how we now text each other pictures of mountains and food we want to eat? Do

I instead talk about how I met Joanne Wendelberger at my first statistics conference and she later became my postdoc adviser? Or do I reminisce about all the fun moments during ASA events such as catching up with my friends at conferences or watching Xiao-Li Meng go down the slide during a brewery tour?

Claire McKay Bowen is the lead data scientist of privacy and data security at the Urban Institute.



Bowen (far right) and other participants at the 2019 New Researcher Conference go on the New Belgium Brewing Company tour. Bowen says she enjoys being an ASA member and making fun memories like this one.



Bowen (left) and Jeri Mulrow met at JSM 2015 and are seen here at JSM 2018. Bowen says Mulrow has been a valuable mentor and friend.

As I contemplated what story to share, I realized these many relationships and memories are all pieces of a much larger story of why I am part of the ASA. Each of these pieces tells my ASA story and motivates me to become more active in my community.

Mentoring, Research, Friendship, Fun Memories, and 'The Why'

Mentoring: I met Jeri at JSM 2015, where she took a chance on me to present at NSF about differential privacy, a mathematical definition that quantifies privacy-loss. Since then, we catch up at each JSM and she has provided me with invaluable career advice that continues to guide

me today. Also, through our mutual love of food, we go out to restaurants around Washington, DC, and JSM conference locations.

Research: Joanne and I happened to pair up during the speed mentoring session at the first Women in Statistics and Data Science Conference. This encounter sparked my first graduate internship and postdoc at Los Alamos National Laboratory. Through these research experiences, Joanne taught me the importance of applied and collaborative research. "We should be doing data-informed decision-making instead of data-driven. We still need that human element."

Friendship: Joanne told me that one of the best parts of going to conferences is catching up with your buddies. My friends Alicia Lamere and Evercita Eugenio and I graduated within a year of each other at Notre Dame, but catch up at each JSM and other ASA conferences.

Fun Memories: In 2019, I attended the New Researcher Conference and opted for the brewery tour as the "fun event." At some point during the tour, I was the one who ended up carrying the extra 12-pack of beer. I carried that box the entire night as we all went out for dinner and bar hopped. Surprised I carried the 12-pack, Xiao-Li asked that I bring the beer to his IMS presidential speech so he could toast to the New Researcher Conference attendees.

The Why: As for why I continue to be active within the ASA, I want to "pay it forward" to the ASA community that provided so much for me. ■

UNC Biostatistics Program Offers Undergraduate Students Opportunity

Jane Monaco, Program Director and UNC Biostatistics Faculty Member



Jane Monaco has directed the BSPH in biostatistics program at The University of North Carolina at Chapel Hill since 2006. She is a clinical associate professor with interests in statistics education and survival analysis.

In the early 1970s, the faculty in the department of biostatistics at The University of North Carolina at Chapel Hill (UNC-CH) considered the following questions: Why should biostatistics graduate students have all the fun? Why not offer a biostatistics degree to undergraduates?

Biostatistics was a growing, rewarding field at the time, but largely limited to students in graduate training. Opening the field to undergraduate students was considered a radical idea. A pool of undergraduates at UNC-CH were the ideal pioneers for training in biostatistics at the undergraduate level. Thus, the BSPH in biostatistics at UNC-CH was born.

Currently, the UNC-CH Biostatistics Department has more than 60 undergraduates (primarily juniors and seniors) pursuing the BSPH degree. It has trained more than 370 undergraduate students under two directors: Craig Turnbull from inception until 2006 and Jane Monaco, who continues to serve in this capacity.

Jenna Tan, a May 2020 BSPH graduate who is entering the MS program at UNC-CH shared, “I am glad I majored in biostatistics because it is the intersection of many of my interests, such as math, health, and programming and, most importantly, it is an important field in promoting public health and improving the welfare of our society! I have truly been challenged to think critically, improve my problem-solving skills, and learn how to collaborate with people both in my discipline and outside of it.”

The program is the largest undergraduate degree in biostatistics in the country, graduating 20 or more students per class in recent years. Almost half of the students in the US who graduated with a degree in biostatistics (from 2003–2018) were UNC-CH biostatistics graduates.

Curriculum and Admission

While the curriculum has been periodically revised and updated, several characteristics have remained constant: a rigorous mathematics component; biostatistics courses primarily taught at the master’s

level; statistical programming coursework; and a public health component.

Students usually apply for the major in their sophomore year and matriculate into the program as a junior. Prerequisite coursework before entering the major includes three semesters of calculus, introductory computer science, and one biology course. The average GPA for recently admitted students is 3.8/4.0. A BSPH graduate in biostatistics has mastered topics in applied and theoretical biostatistics, study design, survey sampling, statistical programming, calculus, linear algebra, discrete math, and advanced mathematics, as well as public health foundations, systems, and solutions.

Housed in the Gillings School of Global Public Health, the degree requires coursework in public health and epidemiology, which differentiates the curriculum from a traditional statistics undergraduate degree.

Previous Graduates

The first BSPH degree in biostatistics was awarded in 1978 to Maura Stokes, who proceeded to earn her MSPH and DrPH in the department. Among her many roles in the statistical community, she served as the senior R&D director at SAS Institute and co-authored *Categorical Data Analysis Using the SAS System*. Stokes is also a fellow of the ASA and has been recognized by the ASA with the Founders Award for distinguished service to the organization.

A more recent graduate of the BSPH in biostatistics is Daniel Malawsky, who graduated in 2020 with a double major in biostatistics and math. Malawsky is also a concert-level cellist. A Morehead-Cain scholar at UNC, Malawsky was recently awarded the Churchill Scholarship to complete a master’s degree focusing on medical genetic research at Cambridge. He will then continue his education at the Wellcome Sanger Institute, pursuing his PhD under a Gates-Cambridge Scholarship and studying the impact of genetic variation on health in underserved populations.



BSPH biostatistics majors gather at the home of Jane Monaco, director of undergraduate studies, in May 2019.

Common Paths and First Destinations

The degree prepares students for a variety of first destinations: graduate work in biostatistics or statistics; medical school; and employment in other fields.

Approximately half the students complete a second major, with the most common discipline being math. In 2019, half the graduates (14 out of 28) were inducted into Phi Beta Kappa. About two-thirds of the last two graduating classes were female, which may partially reflect the gender distribution at UNC-CH.

Students who choose to immediately enter the job market have found success. Workplaces such as IQVIA, Rho, PPD, RTI, FHI 360, and SAS are among the local employers who seek out these students. Typical job titles may include programmer analyst, statistical programmer, statistician, data scientist, or data analyst.

For example, Emma Crenshaw, a BSPH biostatistics graduate in 2019, was hired as a statistician in the Biostatistics and Epidemiology Group at Research Triangle Institute. She shared, “I am so glad that I decided to major in biostatistics. Not only did I truly enjoy what I learned, I was introduced to a community of researchers, professors, and instructors who took a personal interest in what I was doing and what my goals are.”

Recent graduates who have immediately gone on to graduate school have matriculated to graduate programs at institutions including UNC-CH, University of Washington, Johns Hopkins, Harvard, University



Matt Gilleskie is a data analyst at the UNC Center for Aids Research Clinical Core and a BSPH in biostatistics 2019 graduate.

of Michigan, Emory, Columbia, and North Carolina State University. The most recent survey of graduates reveals that more than 60 percent of the BSPH students have pursued graduate education. The most common graduate degree fields are biostatistics, statistics, analytics, data science, and epidemiology.

Conclusion

The field of biostatistics has never been more popular. Undergraduate training in biostatistics is increasing at a fast pace as the demand for skilled, data-savvy workers explodes. Increasing undergraduate educational opportunities in biostatistics can help meet the growing demand for biostatisticians and educate the general population about using data to make informed decisions. ■

A Conversation with DataKind's Executive Director, Jake Porway

David Corliss

Jake Porway is one of the most outstanding figures in Data for Good. Early in his career, he worked in machine learning for image recognition and as a data scientist for *The New York Times* while also leading volunteer projects. In 2011, he founded DataKind and serves as its executive director.

What do you think the state of the art is? A lot is happening in America right now, and I'd like to get your thoughts on what the situation on the ground is and how data can help.

It's really been interesting to see what has changed and what hasn't the last 10 years. We have a space of statisticians and machine learning folks looking for good—ready-made improvement. I think the case has been made, though, for data science and machine learning to be applied to social impact. There's obviously a ton of questions about how to do that capably and ethically, but I think we've done a good job of helping folks on a local scale.

Our goal isn't to do the most volunteer projects in the world, but rather have the greatest impact. The thing I want to see is a world in which our oceans, water, and air are clear—where there's less violence and inequity. So, I think there's a gap right now in the Data for Good movement between helping, say, five NGOs working on



Jake Porway

singular interventions versus saying we have built some kind of data-driven solution that overall advances our social sector. I think one of the challenges is you don't have enough people who can articulate where those field-level problems are and where data science can be most helpful. At DataKind, we launched what we call "impact practices" to address large-scale, sector-wide issues.

There's a lot of intersectionality—interactions between different issues. We're looking at both COVID-19 and the election year, a lot of protests around police violence, and just generally violence toward persons of color.

Yes, this year we've seen a lot of pressing issues in which Data for Good can make a difference. DataKind's Frontline Health Impact Practice is

addressing health care delivery around the globe, and since the COVID-19 outbreak, we've leveraged data science solutions for relief efforts.

Our Economic Resilience Impact Practice is focusing on financial inclusion, keeping people above the poverty line and helping them sustain economic shocks like COVID-19. There is plenty of opportunity for our data.

It's interesting that you had already flagged that as an area you want to focus on and then, when the COVID crisis came up, it was made a lot worse—like a toxic environment resulting from people who don't have good insurance, or commercial operations living on the edge. Almost as if COVID-19 is creating the final result for something many years in the making.

This is where I think there's a sobering commentary on how much data science and technology have a role to play. One of the big conversations in our space right now is the ethics of data use, your model, and, of course, the ethics of AI predictive models that are used. Our craft has largely been used to make stuff faster and cheaper. However, we have to think about these core issues of social justice and addressing our inequitable systems, all of which comes down to human issues, human compassion, and thoughtful consideration.

COVID-19, this isn't just a medical problem. How do we fix the system that's driving higher rates before the next one happens?

Having a data solution isn't just about having an analytic or predictive model. We can look at homelessness and its drivers, or we can look at economic resilience. I can come up with a predictive model like FIFO or something, but what do we do with that? We need to have a call for change and drive that change. We need to look at the big picture and the underlying root factors. It's a long journey to get there.

There's a dearth of people who are able to manage analytic projects. If I could take on one thing, it wouldn't be a better model; it would be a better training program for project leaders.

Allen Downey at Olin College of Engineering said there are three phases of the design process: finding the right model of decision; building the model prototypes; and managing that process. And in school, we all focus there. Now, a lot of data scientists are asking what to do with questions like, "I'd love to hack into COVID-19 data. How can I help?" or "What can we do with data for racial justice?" Instead of focusing on the middle, though, we need to focus on defining the beginning—what is the right problem to solve?

What kind of opportunities do you see today?

Where there's enough commonality between different Data for Good projects, we would love a tool—something close to off-the-shelf that could solve

ASA Journal Gets New Name, Mission

Jeff Witmer, *Journal of Statistics and Data Science Education* Editor-in-Chief

The *Journal of Statistics Education (JSE)* is evolving and taking on a new name. Starting in 2021, the journal will be called the *Journal of Statistics and Data Science Education (JSDSE)*.

JSE has been publishing papers about the teaching of statistics since 1993. Until recently, only a modest percentage of those papers dealt with data science topics.

However, the visibility of data science has grown tremendously in the past decade, and many colleges and universities have created courses on data science. In response to this, *JSE* took on a new section on data science in 2019, handled by Nicholas Horton of Amherst College.

Around the same time, the ASA Section on Statistics Education was considering a name change to the ASA Section on Statistics and Data Science Education, which it recently adopted. Changing from the *Journal of Statistics Education* to the *Journal of Statistics and Data Science Education*



allows the name of the journal to align with the recently renamed section and signals that it welcomes papers about the teaching of data science.

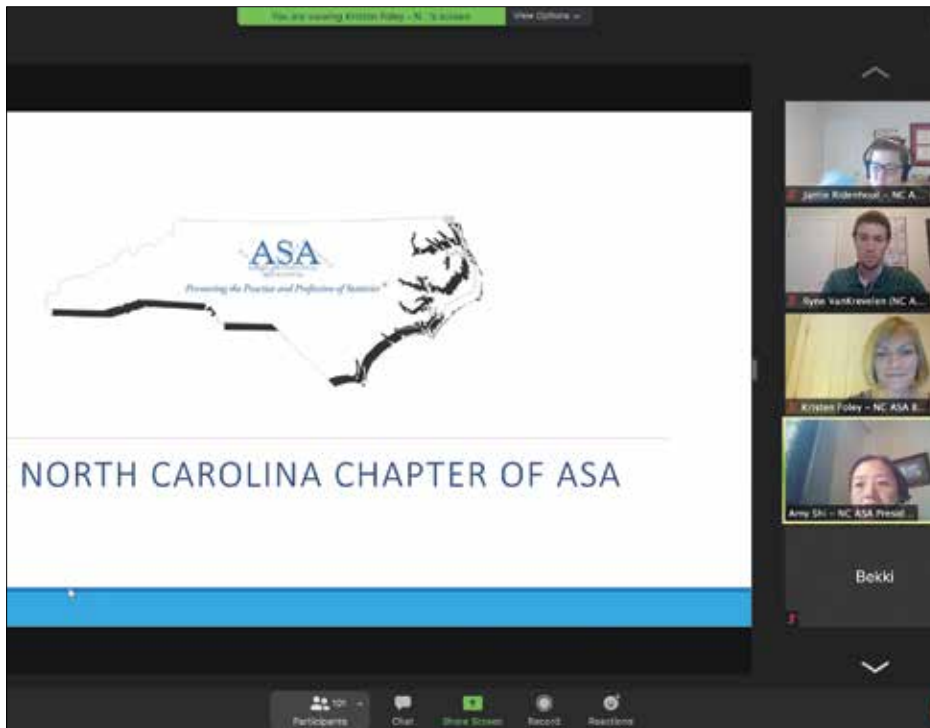
A special issue of the journal with the theme "Computing in the Statistics and Data Science Curriculum" is forthcoming. It comes a decade after Nolan and Temple Lang's paper, "Computing in the Statistics Curriculum," which was published in *The American Statistician*, and will include papers on teaching introductory data science, web scraping, and version control with Git.

To submit papers about teaching statistics and data science education, visit <https://bitly/38zS9Ek>.

prevailing problems. Wouldn't that be great? But we've got to be sober about where data science can actually help. A lot of the issues we're facing in the world today are because of systemic inequity. And that is something that's deeply human, stemming from greed and selfishness.

The silver lining is that data science and AI just supercharge the complex of the system that exists, but they aren't necessarily the root cause. Data science doesn't inherently have its own

ethics, but rather reflects the motivations and biases of the people and entities employing it. We have an opportunity to develop digital solutions ethically that make meaningful impacts on our most pressing issues. And there are opportunities for companies to get involved here. Every dollar counts and can translate into saving lives. Engaging the private sector can help change outcomes on a global and sector-wide scale. ■



Chapter organizers present a reimagined career information fair.

NC Chapter Offers Tips for Holding a Virtual Career Fair

Kristen Foley, ASA North Carolina Chapter Secretary

In 2019, the North Carolina Chapter organized a local career information fair for ASA members. Due to COVID-19, the 2020 fair was initially postponed and then reimagined in an all-virtual format. What follows is information for chapters and sections interested in organizing a similar event.

Structure

NC ASA maintained the speed format from the in-person career information fair, so the event began with a large Zoom meeting in which someone from each participating organization gave a short speech about their company and the kind of work they do. This allowed all participants to hear the same information and all company representatives

to introduce their companies to everyone at once.

After the introductions, attendees had up to two hours to call into separate virtual meetings hosted by each of the participating organizations. These breakout sessions were designed to allow participants to meet briefly with representatives from each organization for a question and answer session, similar to moving from table to table at a physical career fair. NC ASA board members visited the rooms to help ensure everything ran smoothly, and all participating companies had phone numbers to contact board members for assistance if necessary.

NC ASA provided attendees with a summary document prior to the fair that included a brief

write-up about each organization and links to each breakout session. An additional step NC ASA took to ensure the career information fair ran smoothly was to hold a practice session on Zoom with representatives of participating companies. This allowed everyone to become comfortable with the virtual format and discuss tips for managing the breakout sessions.

Most organizations preferred a free-flowing format, with attendees joining and leaving the breakout sessions on their own schedule. Four organizations requested scheduled meetings with 1–5 participants in 15-minute blocks. The NC ASA used SignUpGenius to set up these appointments ahead of time.

Feedback

The career information fair was designed to be different from a traditional jobs fair. While some organizations had open positions to advertise, the primary purpose of the fair was to provide attendees an opportunity to learn about the variety of careers and opportunities available to statisticians and data scientists in government, academia, and industry in the Research Triangle area. Participant feedback, gathered through an anonymous survey sent after the event, was positive:

I got exactly what I was looking for! A chance to see what types of organizations are out there. I appreciate the Virtual Career Fair being held.

I found [the] Career Information Fair to be really helpful. I haven't been getting much career mentoring at all, so being able to chat with folks in the breakout sessions was very informative.

This fair provides an excellent opportunity to talk with recruiters and learn about the

MORE ONLINE
View the 2020 introductory session and summary document at <https://bit.ly/3eVXVRG>.

participating organizations and their job requirements. I really enjoyed this experience.

I think it was a great way to conduct a virtual job fair. I think having a limited amount of companies and attendees was key. Having too many would have been overwhelming.

Recruitment

Despite the online format, NC ASA was able to expand the 14 participating companies at last year's event to 22 organizations this year. Eight out of the original 14 organizations agreed to participate for a second year. In addition, when NC ASA members sent out email recruitment letters to new companies, they were able to highlight the success of the first event.

To recruit attendees, NC ASA sent emails to the ASA listserv and advertised on the chapter's website and via social media. There were 253 individuals registered for the event, and more than 130 signed on during the day of the fair.

The NC ASA posted the Zoom video of the introductory session and summary document to its website for those who wished to attend but were not able to.

Reflections and Takeaways

There are obvious advantages to having an in-person career information fair; however, the virtual format made it easier for organizations and attendees from across the state to participate. When asked about the online format, 13 out of 17 participants who filled out the post-fair survey said they would prefer an online event or hybrid format (in-person and online components) to an in-person event.

For details about organizing a career fair, email Kristen Foley at kmfoley@gmail.com. ■

Virtual StatFest Welcomes International Students

Therri Usher, Committee on Minorities in Statistics

On September 18 and 19, the ASA's Committee on Minorities in Statistics held the 20th annual—and first virtual—StatFest conference. StatFest is traditionally a one-day event aimed at encouraging undergraduate students from historically under-represented groups to consider graduate studies and careers in statistics and data science. It takes place at different locations throughout the US; however, it was held virtually and split over two half-days due to the COVID-19 pandemic.

Despite the transition to a virtual conference halfway through the planning cycle, approximately 80 participants attended each day of StatFest. For the first time and due to the virtual setting, StatFest was able to welcome international participants, with attendees chiming in from South Africa and Malaysia.

The program started with a welcome and opening remarks from Dionne Price, one of the vice presidents of the American Statistical Association. In celebration of the 20th StatFest, its founder, Nagambal Shah, shared some of the history of StatFest, as well as motivating words for student attendees.

Day 1 consisted of two panels focused on statistics and data science careers in the academic, government, industry, and nonprofit sectors. Panelists gave five-minute talks on their background and current work before answering questions from the moderator and audience. The day ended with an expo, where participants had the opportunity to connect with 18 academic departments, programs, and professional institutions.

Day 2 of StatFest began with the keynote address, given by Loni Tabb of Drexel University, followed by a presentation about preparing for graduate school, given by Justine Herrera of Columbia University. This year's parallel sessions consisted of a student-only and professional-oriented session. The student-only session, titled "The Graduate Student Experience," consisted of panelists enrolled in master's and doctoral programs in statistics and data science. Meanwhile, the professional-oriented session focused on dismantling inherent biases to promote the recruitment, retention, and support of students and professionals from under-represented populations.

To promote discussion and networking among attendees, StatFest ended with virtual roundtable sessions defined by topics such as "Summer Opportunities in Statistics and Data Science," "Interview Prep," and "Networking in the Virtual Setting."

Despite the transition to the virtual setting, organizers received positive feedback from attendees during and after the event. A bright spot for several attendees was being able to attend StatFest without having to find travel funding. They expressed the desire to see StatFest develop a hybrid in-person/virtual model in the future.

StatFest 2021 is scheduled to be held at Eli Lilly and Company in Indianapolis, Indiana, and StatFest 2022 is scheduled to be held at Columbia University in New York.

Read more about StatFest 2020 at <https://bit.ly/3pujOMz>. ■

STATS4GOOD

A Look at How Statistical Science Is Making an Impact on Poverty



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 wind up our 2020 series on technology and Data for Good, we're looking at poverty and how statistical science is making an impact through data, improved understanding, and analysis.

Awareness of poverty in the United States as a matter to be addressed in some way at a national level goes back to America's earliest days. The preamble of the US Constitution mentions the need to "promote the general Welfare" among the reasons for its creation. In the 20th century, coordinated action to collect data and analyze and understand it to act on poverty began with the War on Poverty program in 1964. A national standard for poverty was developed: The Poverty Line, sometimes known as the Orshansky Poverty Threshold. The concept implemented at this time was a hunger threshold, with food insecurity as the benchmark for poverty. A set of dollar figures was set for households of different sizes and numbers of children at three times the level needed for spending on food.

While this is a helpful concept, methodological issues immediately arose. The threshold doesn't take into account variations in the cost of living from one place to another, a classic example of what some have called the "flaw of averages." This results in considerable regional variations in the buying power of the poverty threshold.

As one example, Peace-Work used the relative purchasing power from the Bureau of Economic Analysis, found the percent difference between states, and multiplied by the poverty threshold for a family of four to translate it to a dollar amount. For those on a fixed income, that income goes a lot further in some places. However, the working poor in lower-income states face a gap due to the difference between local wages and price of commodities that don't vary much by location. This gap can be substantial—as much as \$379 a month for a family of four in one state (Arkansas).

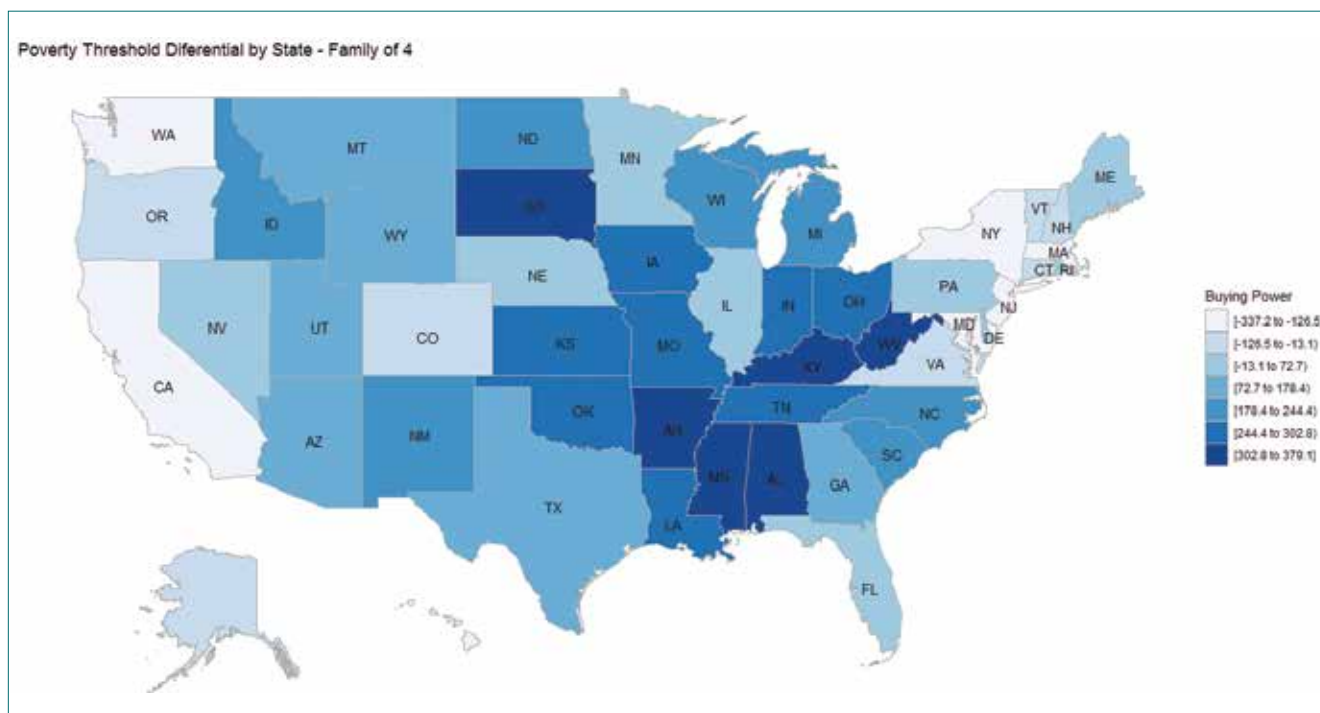
Each year, the poverty threshold is adjusted for inflation using the Consumer Price Index. However, this is the only adjustment made,

resulting in longitudinal drift from the original concept and metrics used to develop it. While many changes in buying habits, household spending, availability of and use of different goods, and especially portion of a household budget and the prices of different components in the original calculation have occurred over the years, the US poverty line and a multitude of programs pegged to it continue to be based on a household food expenditure survey taken in 1955.

A number of methods have been suggested to address these concerns. The US Census Bureau has developed a Supplemental Poverty Measure (SPM) to address a number of them. The Institute for Research on Poverty (IRP) at the University of Wisconsin-Madison gives an excellent description of the SPM (see <https://bit.ly/2GZRPmO>), with a point-by-point comparison to the official Poverty Threshold. The IRP has a number of other helpful resources available on its website (www.irp.wisc.edu). Data for Good researchers interested in poverty research will definitely want to check it out.

The IRP has contracted with HHS to create the National Poverty Research Center, which informs and supports policy, conducts training, and performs research on poverty in the United States. The work of the IRP and the resources they have made available foster better understanding of the many dimensions of poverty. This empowers the development of the materials, technology, and analysis needed to identify and implement data-driven poverty solutions. An important goal of the center is the training and development of a diverse group of researchers to move this important work forward.

The IRP has produced a number of webinars, which are posted on their YouTube channel (<https://bit.ly/38ljFzn>). Areas of interest include both basic research on poverty and important current topics. For example, responding to COVID-19, they hosted a panel discussion, recorded and posted as a webinar, about housing and evictions during the pandemic.



Using data from the Social Security Administration and Bureau of Economic Analysis, David Corliss created this map showing the poverty threshold differential by state for a family of four.

While poverty is defined nationally, it is experienced locally. Prices, housing, access to health care, community services, and other factors differ dramatically from place to place, within states, and even within counties. A community-based approach to understanding poverty informs policy and programs, resulting in better outcomes and more efficient use of limited resources. The need for solutions that work at a local level means many Data for Good researchers are needed. The opportunities are endless and constantly changing to respond to new needs and circumstances. Developing and implementing poverty tech is one of the most important ways D4G is making a difference in the lives of people in communities across the country.

Getting Involved

In D4G opportunities this month, we are highlighting the student award programs from the Section on Statistical Computing and Section on Statistical Graphics, which are awarded at JSM. These competitions are not specific to Data for Good, but certainly offer a great opportunity to showcase your work.

A community-based approach to understanding poverty informs policy and programs, resulting in better outcomes and more efficient use of limited resources.

The John M. Chambers Statistical Software Award recognizes software written by a student or in which a student was a collaborator. Both undergraduate and graduate students can apply.

There is also a student paper competition for papers in statistical computing and statistical graphics. The deadline for submissions is December 15. You can get all the details on both at <http://asa.stat.uconn.edu>. ■

MASTER'S NOTEBOOK

To Get a PhD or Not to Get a PhD? *Part 3*

The ASA Committee on Applied Statisticians gives you the experiences of four statisticians who took different paths after their master's degrees. In previous issues, we featured Kathryn Irvine—who earned a PhD—and Mark Otto—who took a different path and earned his master's. This month, **Allison Florance** explains why she found a master's degree to be right for her.

Allison Florance is global biostatistics development unit head of oncology solid tumors at Novartis and past chair of the Committee on Applied Statisticians. She has an MS in statistics.

I came to statistics through biology. My undergraduate degree is in biology, and I worked in molecular biology labs for five years before going to Iowa State University to earn a master's in statistics. On-the-job learning—rather than school—was my thing, so I moved to North Carolina and worked with the public health science group at Wake Forest University after graduation to support various NIH grants. The MS-level biostatisticians worked under the PhD professors, who held the grants. I truly loved the work environment, and I was always learning from those around me. But after four years, I had to get out from under the masters-level glass ceiling that exists in much of academia. I did not leave to pursue a PhD, however.

I wanted to work for one of the top innovative pharmaceutical companies, but I couldn't seem to break into one with my MS and existing experience. I needed more clinical trial experience, which I was able to get at a contract research organization (CRO). I became familiar with the logistics of clinical trials and, after a year and a half, I took a job at GlaxoSmithKline (GSK), where I stayed for 14 years. I was able to work on HIV and oncology in all aspects of drug development. Again, I continued to learn from those around me. When I left GSK, I managed a staff of around 15 PhDs working on early development clinical trials in oncology.

For the last five years, I've led a large group of biostatisticians at Novartis. I enjoy supporting and developing my staff while still doing a mix of science and statistics with oversight to strategic drug development. Every applied statistician has a scientific domain to work in, where they have to learn the technical language and working culture. I have found my perfect blend of statistics, science, and development of people in my newest role as global biostatistics development unit head of oncology solid tumors.

Looking back, every organization I worked for would have supported me going back for a PhD. I preferred learning on the job, through continuing



Allison Florance works remotely during the COVID-19 pandemic with her two helpers, Dudley and Bullwinkle.

education, and sometimes trial by fire. More school just wasn't for me. Now when hiring for our department, a PhD is required for US positions unless we find an MS with extensive relevant experience. Master's-level statisticians can still excel and lead in pharma, but it is likely a more difficult road to go down in many of the large pharmaceutical companies than it was for me years ago. Would I change my mind if I were to do it again now? Nope! I chose the right path for me. ■

STATtr@k

Students Share Virtual Experiences and Tips for Handling Pandemic

Meg Ruyle, ASA Graphic Designer/Production Coordinator

College students in fully virtual classes are finding new ways to structure their days, stay motivated, and connect with their peers.

Purdue University senior Jessica Gilbert selected on-campus, in-person learning, but was disappointed to learn only one of her classes would actually be on campus. Gilbert, who is studying applied statistics and data science, said classes with more than 150 students were automatically moved online and others were converted to virtual if the university couldn't find a large enough space for students to socially distance in the classroom.

"Of course, being in person is ideal. You get to have that interactive element with your professors, where you get to ask questions in the middle of the lecture or maybe stay after class to ask a few questions," Gilbert said. "But considering circumstances, I can't really complain about things being switched online. I think it's the safest option for everybody."

California State University Monterey Bay didn't offer the option for in-person classes, so statistics majors Nicholas Vasquez and Matthew Dunham knew from the start they would be taking virtual classes in the fall, and both said they thought CSUMB did a good job of making and communicating the decision.

"And they've already called the next semester to be online, as well," said Dunham. "They're pretty on top of everything going on."

However, it's not an ideal situation, Dunham said, and the lack of routine has been difficult. Students are feeling really unmotivated, he said, and professors seem to be struggling too. "I think a lot of students got burned out. It's definitely a difficult time."

"I miss my instructors, obviously, because all of my statistics instructors and my math instructors, the way they teach, it's just fun. They always make us laugh," said Vasquez, who will graduate in the spring.

Dunham's love of statistics has made it easier to stay motivated. He recently switched his major from psychology to statistics. "I feel like finding that passion has made this time online really manageable. Statistics is actually a great major for this online environment. Because it's a lot of just data analysis."

Gilbert agreed staying motivated can be challenging. "You don't have a library to go study in, then go home and do your socializing," she said. "There's no separation anymore. You're just in the same building or the same room all day long."

Starting the day by going to the gym, Dunham said, helps add structure and gives him another way to manage his stress. He only started the habit last summer, spurred by the pandemic and all the time spent at his computer. "I'm just sitting around all day long," he said. "I need to do something."

When Gilbert finds herself losing focus, she takes a break and does something else—takes a walk, chats with her roommate, or checks the mail. "I think just being in tune with my own needs is the highest form of self-care," she said.

Vasquez said effective time management has been the most important skill he has learned during the pandemic. His classes are advanced and time-intensive. He said not procrastinating and completing assignments as soon as they're assigned has been helpful.

Gilbert added that she's come to rely heavily on checklists, which help her relieve stress and motivate her to keep working. She also said emailing her professors and letting them know when she's in the middle of a really busy phase is important. She hopes all professors are as understanding as hers have been.

"Being really flexible with students is important because we want to learn everything and we want to get everything done," Gilbert said.

Vasquez said his professors and CSUMB have all been extremely helpful, as well, and good about alerting students to resources, including mental health services. "They genuinely care and they're interested to see if anyone is struggling and how they can help," Vasquez said. "They've just been very, very supportive to all the students during these times."

While Gilbert thinks her professors have done a good job adapting to an online platform, she said being social is harder. She keeps in touch with friends and family virtually and will sometimes see friends outside, since she lives in a house and not a dorm.

It helps that she's in her senior year, she said. "I already know a lot of people in my major, so I'm able to connect with them."

Gilbert thinks it is harder for underclassmen. "I can't imagine for freshmen, and even sophomores, how tough this is to go from high-school classes straight to college work online, where you don't necessarily get to ... build your group of people who can help support you through your academic career," she said. ■



Matthew Dunham



Nicholas Vasquez



Jessica Gilbert

TELL US

College students: What are some tools you use to manage stress? Tag @AmstatNews on Twitter!



Felicity Enders of the Mayo Clinic discusses reducing barriers to statistics and data science education at WSDS 2020.

Virtual WSDS Maintains

CONNECTION

Among Participants

Donna LaLonde, ASA Director of Strategic Initiatives and Outreach

More than 350 people attended the virtual WSDS, which began September 30 with two short courses. Conference presentations began October 1 and included two plenary talks and a plenary panel.

During the first plenary, which took place Thursday morning, Michelle Dunn invited listeners into her garden to provide context for her talk about her data science leadership journey. She introduced attendees to two of her mentors, who added to Dunn's wisdom and advice with their perspectives.

Thursday's formal presentations ended with a plenary panel featuring Lynne Billard of the University of Georgia, Susan Ellenberg of the University of Pennsylvania Perelman School of Medicine, and Nancy Reid of the University of Toronto—all past

WSDS Organizing Committee

Stephanie Hicks	Jessica Kohlschmidt
Lucy McGowan	Dalene Stangl
Wendy Lou	Christina Link
Nicole Lazar	

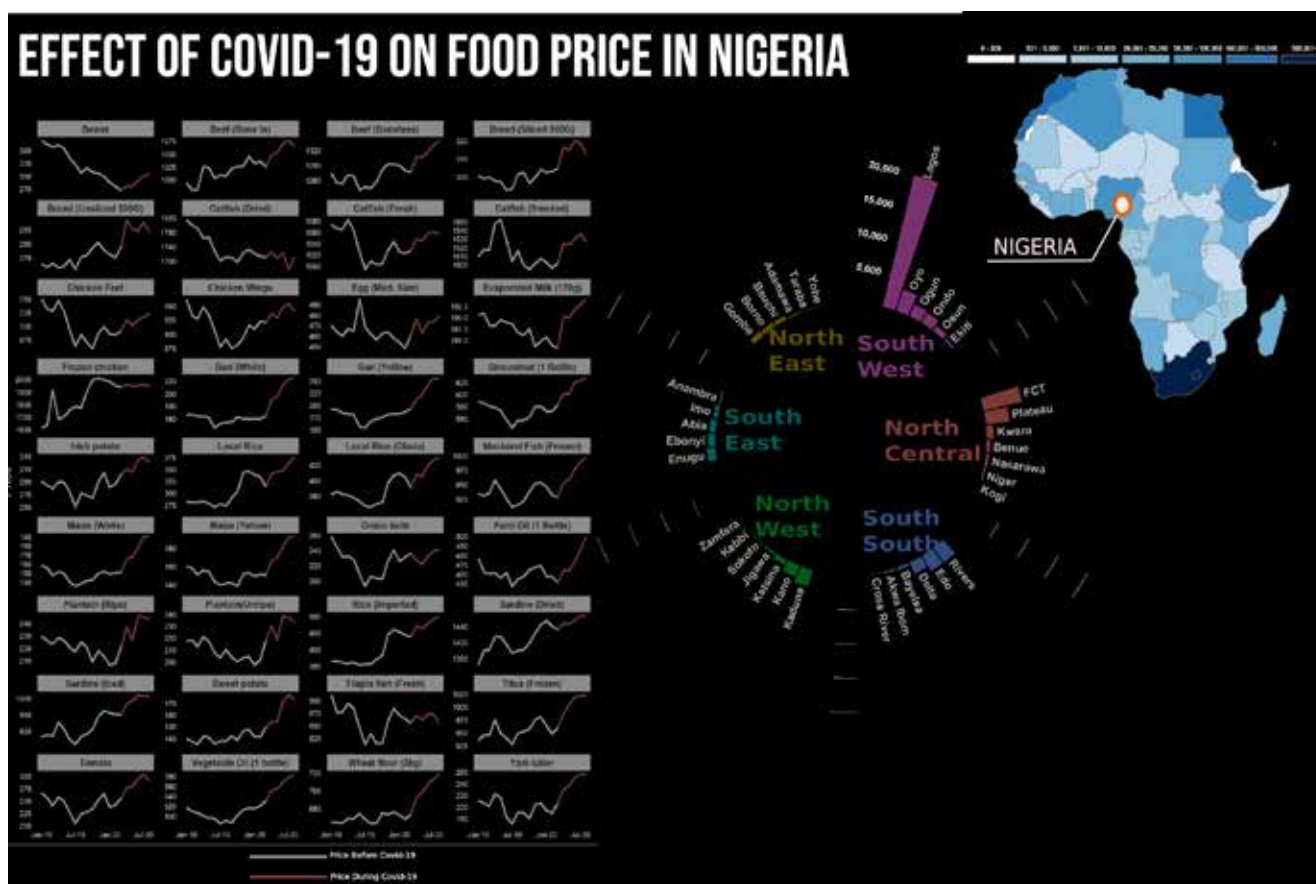
recipients of the F.N. David Award. Nusrat Jahan of James Madison University and Dalene Stangl of Carnegie Mellon University served as moderators. Thursday also included a virtual networking event that allowed friends and colleagues to talk, a tradition for many who attend WSDS.

The final day of the conference, Friday, began with a plenary presentation by Catherine D'Ignazio of Massachusetts Institute of Technology and Lauren F. Klein of Emory University, authors of the book *Data Feminism*. D'Ignazio and Klein challenged attendees to consider a new way of thinking about data science informed by intersectional feminism.



Leslie McClure
@StatGirlLAM

Great session about confronting privilege and reducing barriers to #statistics and #datascience education featuring @FelicityEnders @EKTbenn @minebocek at #WSDS2020!



In recognition of the International Year of Women in Statistics and Data Science and the 200th anniversary of the birth of Florence Nightingale, organizers for the WSDS 2020 Data Challenge invited teams and individuals to create a visualization to help the public better understand an important current issue. This image was created by Serifat Folorunso from the University of Ibadan Laboratory for Interdisciplinary Statistical Analysis in Nigeria.

They asked the audience to consider questions such as “Data science by whom?” “Data science for whom?” and “Data science with whose interests in mind?” Members of the audience shared their thoughts, making for a spirited virtual discussion.

The conference themes are *Share Knowledge*, *Build Community*, and *Grow Influence*, which are represented in the many concurrent sessions and poster presentations. For example, the 2020 conference had panel discussions about data governance in the era of big data, organized by Katherine S. Panageas; promoting mentor-mentee relationships, chaired by Emma Benn; and skills and strategies for successful negotiation, organized by Jessica Lavery. Topics of concurrent session presentations ranged from how to get published by Andee Nichols to generalization to higher-order function smoothness in bandit optimization of non-convex functions by Yusha Liu. Additionally, there was time devoted to viewing posters and having conversation with poster presenters.

The platform will be available to all registered attendees until August 31, 2021, and can be accessed

from the conference homepage: <https://bit.ly/32NmifD>.

This year’s conference took place during both the International Year of Women in Statistics and Data Science and the 200th anniversary of the birth of Florence Nightingale. In recognition of these events, organizers for the WSDS 2020 Data Challenge invited teams and individuals to create a visualization to help the public better understand an important current issue. The image accompanying this article was created by Serifat Folorunso from the University of Ibadan Laboratory for Interdisciplinary Statistical Analysis in Nigeria.

Plans for WSDS 2021 are already underway. Suggestions for the conference can be sent to ASA Director of Strategic Initiatives and Outreach Donna LaLonde at donnal@amstat.org. ■



JSM 2021: Opportunities for Involvement Abound



Statistics, Data, and
the Stories They Tell
Washington State Convention Center
August 7–12, 2021

Nicole Lazar, JSM 2021 Program Chair

In 2021, one of the largest statistical events in the world—the Joint Statistical Meetings (JSM)—will be held in Seattle, Washington, August 7–12. The theme for the meeting is “Statistics, Data, and the Stories They Tell,” emphasizing the role statistics plays in helping society understand the world. As ever-more complex data becomes a hallmark of modern science and policymaking, statisticians have a growing societal importance, which is reflected in the 2021 JSM theme.

The invited program, nearly complete, includes 209 sessions telling a wide range of stories—both theoretical and applied. The pandemic is the focus of a number of those stories, but there are many others, as well, including sports, wearable technologies, and genomics. A variety of methodological approaches—including for longitudinal and spatial data and multimodal data—are also represented.

The process leading to the selection of the invited sessions was, as always, competitive. Many strong proposals were not selected, but there are still ways to get involved in the 2021 JSM program. Due to the continuing uncertainty surrounding the coming year, some of the deadlines for

JSM 2021—particularly those for the contributed portion—are later than they typically are. This will give everyone time to figure out their plans for the conference and secure funding for attendance, in addition to the clarity that time should bring. Despite the later deadlines, it’s not too soon to be thinking about getting involved.

Speed Sessions

The speed session is an increasingly popular JSM format. It allows for an electronic poster (e-poster) presentation, which enables video and other special effects. Speed session presenters give a four-minute oral advertisement for a later poster presentation. These oral presentations are collected in sets of 20, with a five-minute break in the middle. This is followed later by the e-poster phase, which lasts 45 minutes. The program committee tries to cluster speed session posters by topic to attract a large and focused audience.

Here are some tips, based on experience with previous speed sessions:

- The oral component should lure people. Don’t try to be too detailed, but rather give the big picture view. A little humor helps.

- E-posters can include software demonstrations, analysis animations, videos, and interactive statistical graphics or dashboards. Take advantage of the versatility of the medium. Don’t think in terms of a static poster. Be modern and daring.

Note that you don’t need to pay for poster printing, nor do you have the hassle of transporting a poster in the overhead compartment of an airplane, when you participate in an e-poster session.

Poster Sessions

In many fields, the main way to present research is through a poster. Presenting a poster at JSM allows face-to-face extended discussion with individuals or small groups interested in the topic, providing researchers with more direct feedback than is typically possible with a contributed paper talk.

Contributed Sessions

Contributed paper sessions consist of seven papers with 15 minutes of presentation time for each, including the introduction of the speaker and questions. Although this is still the preferred way to present research for many JSM participants (nearly half of JSM sessions are contributed sessions), the short duration of the talks, relative difficulty interacting with the audience, and large number of parallel sessions might lead researchers to consider trying a speed or poster session.

Topic-Contributed Sessions

For the previous modes of presentation, a participant simply submits

a title and abstract by the deadline (see below) and several presentations are put together into cohesive sessions by the JSM 2021 Program Committee. But if you can put together five speakers on a common theme—either five papers or four papers with one discussant—you can submit a proposal for a topic-contributed session.

Topic-contributed sessions are allocated on a competitive basis, however, and each ASA section, committee, interest group, or partner society has a limited number of them. So, before submitting a proposal to a section or society, get in touch with the relevant JSM 2021 Program Committee members to let them know of your interest (see <https://bit.ly/3320nBJ>).

Because of the selection process, topic-contributed sessions are often more cohesive than contributed paper sessions and feature high-quality papers. The advantage is that each speaker has 20 minutes of presentation time, instead of 15 minutes. Organizers must select a theme, invite five speakers, and ensure speakers' commitments prior to the submission deadline of December 10, 2020. Session participants must follow the rules for JSM participation (see <https://bit.ly/3npUFBf>). Finally, only online session proposal submissions will be considered for the topic-contributed program.

Abstract Submission

Topic-contributed abstract submission for those sessions selected by the program committee will be open January 6 to February 2, 2021. Advanced registration is not required this year when submitting a topic-contributed abstract. Abstract editing for invited and topic-contributed sessions will be open from March 16 to April 14, 2021, at which point you should also register for JSM.

To contribute to the JSM 2021 program in any of the above venues except for topic-contributed

sessions, submit an abstract and title online from March 16 to April 14, 2021. Registration is required when submitting contributed paper and poster abstracts. As part of the submission process, you must also specify the choice of the ASA section or JSM partner society most closely associated with the topic of your presentation.

Session Chairs

All JSM sessions require a chair to ensure speakers are well

informed about the session in advance, introduce speakers, and manage time for each speaker. Chairing a session is a way to get involved with JSM and network with other professionals in your field. Especially encouraged are people who are new to the profession. Simply volunteer to the program committee members of your section or society.

Contact JSM 2021 Program Chair Nicole Lazar at nfl5182@psu.edu with any questions. ■

DEPARTMENT of
BIOSTATISTICS
EPIDEMIOLOGY &
INFORMATICS

Perelman
School of Medicine
University of Pennsylvania

13th Annual Clinical Trials Conference
VIRTUAL

SAVE THE DATE!

Monday, April 12, 2021 (8:30 A.M. to 4:30 PM)

13th Annual University of Pennsylvania

Conference on Statistical Issues in Clinical Trials:

Cluster Randomized Clinical Trials: Challenges and Opportunities

Registration opens January 2021

SPEAKERS AND TOPICS

DAVID MURRAY NIH	<i>Overview: Innovations in the Design and Analysis of Group - or Cluster-Randomized Trials</i>
VICTOR DeGRUTTOLA Harvard	<i>Using Network-level (and Individual-level) Information in Design and Analysis</i>
LUKE J. KEELE University of Pennsylvania	<i>Complexities Caused by Noncompliance in Cluster Randomized Trials</i>
JAMES P. HUGHES University of Washington	<i>Current Issues in the Design and Analysis of Stepped Wedge Trials</i>
LAWRENCE H. MOULTON Johns Hopkins University	<i>Randomization: Beyond the Closurization Principle</i>
NATALIE E. DEAN University of Florida	<i>The Ring Trial Design for the Estimation of Vaccine Efficacy and Effectiveness During Infectious Disease Outbreaks</i>
DEBORAH J. DONNELL University of Washington	<i>Challenges in Implementing CRTs: from Hawthorne Effect to Measurement Bias</i>
WEILI HE AbbVie	<i>Practical Considerations in Utilizing Cluster Randomization Trials in Medical Research</i>
PANELISTS	
Andrew Copas	University College London
Karla Hemming	University of Birmingham
David Murray	NIH
Mike Proschan	NIH
Jeffrey Roberts	FDA CBER
Alisa J. Stephens-Shields	University of Pennsylvania

Up to date information at:

<https://www.cceb.med.upenn.edu/events/13th-university-pennsylvania-conference-statistical-issues-clinical-trials>



2021 INTERNSHIPS



The following companies are looking for interns in 2021. If you are interested in improving your programming techniques, making connections, or honing your data analysis skills, apply for one of these opportunities.

If your organization would like to include an internship opportunity on our website, complete the form at <http://bit.ly/2CBAzyH>. Interested students will send a letter of inquiry and résumé directly to the contact and location you list.

AbbVie, Inc.

North Chicago, Illinois

Positions: Multiple

Type of Student: PhD candidates in statistics or biostatistics

Deadline: February 15, 2021

In this 10–12-week summer program (beginning May/June), the interns will work on statistical research topics related to the pharmaceutical industry. Potential statistical topics include deep learning, historical data borrowing, missing data imputation, and survival analysis, etc. Interns will present project/assignment results and learnings to department management and the broader team at the conclusion of the internship.

Apply: <https://bit.ly/3f1AHKc> (search 2021 experiential internship for data statistical sciences)

Contact: Meijing Wu, meijing.wu@abbvie.com, (847) 937-6266

Amgen

Thousand Oaks, California

Positions: 2

Type of Student: Graduate, PhD

Deadline: January 31, 2021

Amgen's 10–12-week internship program offers meaningful projects that affect patient's lives. The internship provides competitive compensation and the opportunity for interns to participate in executive and social networking events and community volunteer projects. Relocation in the form of a transportation allowance will be provided for eligible candidates.

The intern for this position within the Center for Design and Analysis will work closely

with a senior-level statistician or data scientist on topics related to the design and analysis of clinical trials and/or nonclinical research. At the conclusion of the internship, the intern will give a presentation summarizing the work completed during the program.

Apply: <https://bit.ly/2lydQJM>

Contact: Anthony Dominguez, adomin02@amgen.com, (805) 313-1494

Astellas Pharmaceuticals

Northbrook, Illinois

Positions: 2+

Type of Student: PhD candidates in statistics or related disciplines

Deadline: January 29, 2021

MORE ONLINE
Find full descriptions for these internships on STATtr@k at <https://stattrak.amstat.org>.

Full-time internships are available in the summer for 10–12 weeks. Successful candidates will work closely with a senior-level statistician on topics related to the design and analysis of clinical trials and statistical research.

The project will be a hands-on learning experience involving both statistical and related data review and data analysis programming tasks. The programming tasks will involve use of SAS, R, and/or other statistical software on the UNIX platform or PC.

Apply: Send a CV and/or a letter of recommendation to Biostat.Intern@Astellas.com.

Battelle Memorial Institute

Columbus, Ohio

Positions: 3

Type of Student:

Undergraduate, master's, PhD

Deadline: November 1

Data Science Intern (SU21), Software Engineering Co-op (SP21), Software Engineering Intern (SU21)

Contact: Juli Garn, garn@battelle.org

Biogen

Cambridge, Massachusetts

Positions: Multiple

Type of Student: PhD students in biostatistics, statistics, or related field

Deadline: January 31, 2021, with rolling offers

The biostatistics department at Biogen will have four internship positions available for approximately 12 weeks in the summer of 2021. The interns will work with one or multiple senior-level statisticians on research projects closely related to clinical trials or nonclinical research. They will also have the opportunity

to be exposed to the drug development process.

The research work will be presented at the departmental seminar, and/or the company poster session and may lead to an internal study report or a peer-reviewed publication.

Apply: Send a CV to James Xiao, james.xiao@biogen.com; 225 Binney Street, Cambridge, MA 02142; (617) 679-3197

Boehringer Ingelheim Pharmaceuticals, Inc.

Ridgefield, Connecticut

Positions: Up to 5

Type of Student: Current MS or PhD students in biostatistics, statistics, or a related degree program

Deadline: January 31, 2021

Boehringer Ingelheim will have multiple full-time summer biostatistics internship openings for approximately 12 weeks (May/June to August/September; dates flexible). As a biostatistics intern, you will work with a senior-level statistician on a statistical research project related to the pharmaceutical industry and clinical trials. Potential topics include survival analysis, Bayesian methods, dose-finding, etc., with applications to oncology, immunology, cardiology, respiratory, or central nervous system disorders. Interns are expected to present the results of their research at the end of the program and may have the opportunity to summarize their work in a peer-reviewed publication.

Apply: <https://bit.ly/32FC8ZB>

Contact: Songqiao Huang (songqiao.huang@boehringer-ingelheim.com) or Sheng Qiu (sheng.qiu@boehringer-ingelheim.com), Boehringer Ingelheim Pharmaceuticals, Inc., 900 Ridgebury Road,

Ridgefield, CT 06877; (203) 798-5028 or (203) 798-4739

Bristol-Myers Squibb Company

Princeton, New Jersey; Berkeley Heights, New Jersey; San Diego, California; Seattle, Washington

Positions: Multiple

Type of Student: Master's or doctoral students in statistics, biostatistics, or data science

Deadline: March 1, 2021

Full-time internships are available in the summer and will last 10–12 weeks. Part-time internships are available during the school year and may continue for longer periods. Starting and ending dates are flexible.

Successful candidates will work closely with a senior-level statistician on statistical methodology and/or application topics related to the design and analysis of clinical trials and/or nonclinical research in a variety of therapeutic areas.

Apply: Send unofficial graduate transcripts, a résumé, and a cover letter to Margaret Brossman at margaret.brossman@bms.com.

Cincinnati Children's Hospital Medical Center

Cincinnati, Ohio

Positions: Multiple

Type of Student: Graduate, PhD

Deadline: November 1, 2021

Biostatistics and epidemiology are fundamental scientific components in biomedical, psychosocial/behavioral, and public health research. The Division of Biostatistics and Epidemiology (DBE) offers an advanced internship program designed to offer aspiring students training opportunities in biostatistics and epidemiology. The hands-on experience will

complement and enhance the student's classroom education.

Contact: Bin Huang (*Bin.Huang@cchmc.org*), c/o Tyra Valenzuela-Ray, Cincinnati Children's Hospital Medical Center, 3333 Burnet Ave., MLC 5041, Cincinnati, OH 45229; (513) 803-4447

The D. E. Shaw Group

New York, New York

Positions: 14

Type of Student: All degree levels

Deadline: Rolling applications

Are you a math ace who wants to test Bayesian priors on complex data sets, a finance whiz who can help us analyze global securities markets, or a humanities student eager to tackle complex, multidisciplinary problems? Then you may be the right match for our internship program.

Apply: www.deshaw.com/careers/internships

Dordt University

Sioux Center, Iowa

Positions: 5–6

Type of Student: Undergraduate

Deadline: January 31, 2021

Undergraduate students with an interest in statistical genetics and biostatistics are encouraged to apply to participate in the 16th consecutive year of our nationally recognized undergraduate research program in statistical genetics. Successful applicants will work with a team of undergraduate students on cutting-edge problems in statistical genetics leading to publication in peer-reviewed journals and presentations at regional and national conferences. Visit the statistical genetics website at www.dordt.edu/statgen for

more information, a link to this year's project descriptions, and an application.

Contact: Nathan Tintle, nathan.tintle@dordt.edu, (712) 722-6264

Eli Lilly and Company

Indianapolis, Indiana

Positions: Multiple

Type of Student: Candidates are enrolled in a graduate-level curriculum leading to a PhD or master's degree in statistics or biostatistics. PhD students are required to have completed at least three years of graduate work by May 2021.

Deadline: January 15, 2021

The Statistics, Data, and Analytics Division of Eli Lilly and Company anticipates having several internship positions available for the summer of 2021. The internships start in either May or June and last 12 weeks.

We will provide you with practical experience and give you the opportunity to build your understanding of the pharmaceutical industry and Eli Lilly and Company. Successful candidates will be assigned specific projects to work on under the guidance of a Lilly statistician or statistical analyst (mentor).

Apply: PhD students: <https://bit.ly/3ko29CN>; master's students: <https://bit.ly/36twGKt>

Contact: Alexandria Pernell, APernell@lilly.com

The Emmes Company

Rockville, Maryland

Positions: 3

Type of Student: MS or PhD in statistics or biostatistics

The biostatistics intern will work closely with biostatisticians on biomedical research projects across a variety of disease areas. Interns meet

with epidemiologists, project coordinators, and biomedical investigators and will contribute to the design and analysis of clinical research projects.

The internship posting will be live for applications on the Emmes Career Center in January 2021.

Contact: Kate Salava, ksalava@emmes.com, (301)251-1161

Genentech, Inc.

South San Francisco, California

Positions: Multiple

Type of Student: PhD

Deadline: January 15, 2021; applications submitted by December 18, 2020, will receive priority review

The biostatistics summer interns will work for 10–12 weeks under the supervision of experienced biostatisticians on theoretical or applied problems with direct relevance to ongoing clinical or nonclinical drug development in diverse therapeutic areas such as oncology, immunology, infectious disease, ophthalmology, and neuroscience. The specific topics may cover research problems from translational research to late-stage clinical trials and post-marketing evaluations. At the end of the internship, each student will give a department-wide presentation on the intern project(s). It is not uncommon for an intern to summarize their work in a peer-reviewed publication.

Apply: <https://go.gene.com/biostatsummerintern2021>

Contact: gnebiostatsummerintern@gene.com

GlaxoSmithKline Upper Providence, Pennsylvania

Positions: 2

Type of Student: PhD

Deadline: February 12, 2021

Research statistics—the pre-clinical biostatistics division of GSK—is seeking innovative, flexible, and pragmatic people who enjoy solving challenging problems for a 10–12-week full-time summer internship position. The selected candidates will have the opportunity with other statisticians and GSK scientists to address drug discovery questions with statistical methods. Potential statistical topics include experimental design, mixed models, repeated measures, analysis of high-dimensional data, machine learning algorithms, and Bayesian methods.

Contact: Andrew Gehman, andrew.x.gehman@gsk.com

Google

Bay Area, California; New York, New York; Seattle, Washington

Positions: Multiple

Type of Student: PhD in a quantitative discipline

Deadline: January 22, 2021

Google's statisticians and data scientists/quantitative analysts work within our software engineering organization, including life sciences, geo, machine learning, technical infrastructure, search, YouTube, and advertising. We analyze huge sets of data and continually run live experiments to help drive critical decisions at Google. We support the development of innovative, highly scalable, next-generation technologies through deep research and advanced analysis.

Apply online from January 4–22, 2021.

Contact: [Google.com/students](https://google.com/students)

Janssen R&D, a Division of Johnson & Johnson

Spring House, Pennsylvania; Titusville, New Jersey; Raritan, New Jersey; La Jolla, California; Remote

Positions: 8

Type of Student: PhD candidate

Deadline: February 15, 2021

Summer internships are available for students working toward a PhD in statistics, biostatistics, or a related discipline. Students will have the opportunity to work with practicing statisticians and learn about statistical applications specific to clinical or nonclinical pharmaceutical industry settings. They will be involved in activities such as supporting research and development in areas that range from drug discovery through phase 2 and 3 clinical studies and, concurrently, pharmaceutical manufacturing, including data preparation, graphical exploration of data, statistical model building and analyses, report writing, and writing of computer programs or applications associated with the statistical analyses. Other activities may include designing experiments, conducting simulations to evaluate optimal designs, and participating in methodological development.

Visit STATtr@k at <https://stattrak.amstat.org> for the direct link to the posting and application form.

Contact: sdsrecruiting@its.jnj.com

Liberty Mutual Insurance

Boston, Massachusetts

Positions: 20–25

Type of Student: MS or PhD students enrolled in program during summer 2021

Deadline: Rolling; early applications encouraged for immediate consideration

In the 10–12-week data science graduate-level internship, you'll build robust models and use statistical software such as R, Python, and SAS to solve critical business problems in product management, claims, distribution, marketing, HR, legal, finance, and other business functions.

At the conclusion of your summer internship, you'll deliver a presentation of your work and skills to your colleagues and the data science management team.

Apply: lmi.co/graduate (job keyword 114868)

Contact:

GradCampusRecruiting@LibertyMutual.com

Los Alamos National Laboratory

Los Alamos, New Mexico

Positions: 8–15

Type of Student: High school, undergraduate, graduate

Deadline: Priority given to applications received by February 1, 2021

The Statistical Sciences Group at Los Alamos National Laboratory is looking for interns interested in exploring a career in research, development, and collaborative application of statistical methods. Students will have the opportunity to develop and use methods from areas such as spatial statistics, time series, machine learning, reliability, design of experiments, computer experiments, Bayesian methods, functional data analysis, stochastic processes, hierarchical models, industrial statistics, uncertainty quantification, data fusion, graphical models, advanced regression

techniques, and statistical computing.

Internships are typically 10–12 weeks during the summer. The exact timing and length can be arranged to accommodate student and mentor schedules. Student salaries are competitive and depend on the years of education completed.

Apply: Send a cover letter email with a résumé to Carrie Ryan at cjryan@lanl.gov using the subject line “Summer 2021 Internship.”

The Lubrizol Corporation

Wickliffe, Ohio

Positions: 4–5

Type of Student:

Undergraduate, graduate, PhD

Deadline: February 5, 2020

The statistics and data analytics team is charged with creating systems that enable highly effective product development via virtual experimentation, optimization, and knowledge discovery. In addition, the team provides data science consulting services to the Lubrizol technical community throughout the world. The project work depends on the skills/interests of the intern and the current needs of the department.

Apply: lubrizol.com/careers

Contact: Allison Rajakumar, allison.rajakumar@lubrizol.com; 29400 Lakeland Blvd., Wickliffe, OH 44092; (440) 347-4679

Merck Research Laboratories

Suburban Philadelphia, Pennsylvania; Rahway, New Jersey; Kenilworth, New Jersey

Positions: 15

Type of Student: Graduate

Deadline: Rolling

The Biostatistics and Research Decision Sciences (BARDS) Department has approximately 15 internships in preclinical biostatistics and clinical biostatistics for full-time graduate students pursuing an MS or PhD in statistics or biostatistics.

Interns will work closely with an experienced pharmaceutical industry statistician to perform statistical analysis of data from and/or statistical research related to basic drug research, clinical pharmacology, drug and vaccine development, biomarker development, or pharmacogenomics.

Apply: www.merck.com/careers (search for 2021 Biostatistics Graduate Intern)

Netflix (Data Science and Engineering)

Remote (Los Gatos/Los Angeles, California, if in-person options become available)

Positions: 6–8

Type of Student: Undergrad, master's, PhD (grad preferred)

Deadline: Interviews will begin in early January 2021 (possibly sooner)

We offer a personalized experience for interns and one that mimics what it's like to actually work here. We match qualified interns with projects and groups based on interests and skill sets and fully embed interns within those groups for the summer. We have projects that span machine learning, experimentation and causal inference, analytics, and data engineering (learn more at research.netflix.com).

Internships will be a minimum of 12 weeks, with timing flexible to candidate needs. More detail is available at jobs.netflix.com.

Contact: dse-interns-info@netflix.com

Novartis

Remote; East Hanover, New Jersey; Cambridge, Massachusetts; Fort Worth, Texas; Princeton, New Jersey

Positions: Multiple

Type of Student: Graduate, PhD

Deadline: January 31, 2021

The department of analytics at Novartis will have multiple internship positions available for approximately 12 weeks in 2021 (May to August; dates flexible).

Interns will work on statistics, pharmacometrics, or data science projects to design and analyze clinical trials and/or perform relevant quantitative research under the guidance of experienced quantitative scientists. Various real-world problems will give interns hands-on exposure to the early and late phases of drug development across different therapeutic areas, including oncology, cardiology, immunology, neurology, ophthalmology, and respiratory care. Potential topics include machine learning (e.g., deep learning), survival analyses, causal inference, Bayesian statistics, disease progression modeling, and/or PK/PD modeling. Interns will also attend seminars and other activities to enhance their understanding of the drug development process. There will be opportunities for interns to present their project results to quantitative scientists and other key stakeholders.

Apply: Send a CV to internships.analytics@novartis.com

Novartis Gene Therapies

San Diego, California

Positions: 1

Type of Student: PhD

Methods development for novel clinical trial designs in gene

therapy. Reimbursement for travel to San Diego and housing will be provided. Remote work is also possible depending on the COVID situation.

Apply: <https://bit.ly/2Um9RCP>

Pfizer Inc.

Remote; La Jolla, California; Boulder, Colorado; Groton, Connecticut; Collegeville, Pennsylvania; Cambridge, Massachusetts; New York, New York

Positions: 15

Type of Student: Graduate student in statistics, biostatistics, or related field

Deadline: January 31, 2021

The internship will consist of up to 480 hours of work commencing as early as April and ending as late as December. The intern's project will be biomedically oriented, with one-on-one supervision by a senior staff statistician. The work will be a hands-on learning experience focusing on current project needs and will likely involve use of SAS, R, or other statistical software. As part of the internship program, the intern will prepare a written report and brief presentation summarizing the work and forming a permanent record of their efforts.

Apply: Submit your application via Handshake (Job ID: #4123533 Pfizer Statistics Internships) at <https://bit.ly/3kszxlw>.

Contact: Xun Lin, Xun.Lin@pfizer.com

PRA Health Sciences

Deerfield, Illinois; Blue Bell, Pennsylvania

Positions: 2

Type of Student: Graduate, PhD

Deadline: TBD

Work will develop and enrich knowledge of the CRO industry and programming.

Contact and Apply: internships@prahs.com; (919) 786-8200

StataCorp LLC

College Station, Texas

Positions: 1–3

Type of Student: PhD student in statistics, biostatistics, econometrics, or a closely related field

Deadline: January 20, 2021

Job duties may include learning how to use and program in Stata, collaborating on projects suitable for publication in the Stata Journal, and assisting in adding new features to Stata, along with testing and documenting those features.

Apply: stata.com/internships

Contact: kherring@stata.com; (979) 696-4600

STATKING Clinical Services

Fairfield, Ohio

Positions: 1

Type of Student: Graduate

Deadline: March 1, 2021

This internship will include composition of statistical documents for clinical trials, as well as writing SAS code to compute sample sizes and perform data analyses.

This is an onsite position, lasting 10–12 weeks during summer 2021. Start and end dates are flexible, provided the selected candidate is available for a minimum of 10 weeks. A monthly stipend of \$3,000 will be provided. A separate housing allowance is included.

Apply: Send cover letter and CV to info@statkingclinical.com.

Contact: Lori A. Christman, lori@statkingclinical.com; 759 Wessel Drive, Fairfield, OH 45014; (513) 858-2989, Ext. 317

Takeda Pharmaceuticals

Cambridge, Massachusetts

Positions: Multiple

Type of Student: PhD candidates in biostatistics, statistics, or related disciplines

Deadline: March 15, 2021

Interns will work closely with experienced industry statisticians/data scientists on topics related to design and analysis of clinical trials and/or pre-clinical research (e.g., Bayesian methods, innovative trial designs, RWD/RWE, artificial intelligence/machine learning, and data science).

At the end of the internship program, interns will give a presentation summarizing their work and may have the opportunity to summarize their work in a peer-reviewed publication.

Apply: Email your résumé and cover letter to biostatistics. intern@takeda.com.

Contact: Jianchang Lin, biostatistics.intern@takeda.com; 300 Massachusetts Ave., Cambridge, MA 02139; (617) 444-1200

Thomas Jefferson University

Philadelphia, Pennsylvania

Positions: 3

Type of Student: Undergraduate (junior, senior), graduate (MS or PhD)

Deadline: February 15, 2021

Jefferson's division of biostatistics in the department of pharmacology and experimental therapeutics will

sponsor up to three students as summer interns. Interns will do the following:

- Research statistical topics relevant to biomedical research
- Apply statistical thinking to biomedical research problems
- Analyze real-world biomedical data and interpret the results
- Develop statistical programming skills in SAS, R, and other languages
- Develop and practice communication of statistical methods and results through written reports and oral presentations
- Receive guidance and mentoring regarding their future studies and career trajectory

The internship will run for 8–10 weeks from June to August. Depending on the COVID-19 situation, it will take place either in person or remotely. Interns will be paid a stipend, which will be dependent on academic level, experience, and work schedule.

Apply: <https://bit.ly/35sBvEN>

Contact: Constantine Daskalakis, constantine.daskalakis@jefferson.edu

Travelers

Hartford, Connecticut; St. Paul, Minnesota

Positions: 35

Type of Student: Graduate

Deadline: February 28, 2021

As a DSLDP intern at Travelers, you will be exposed to a challenging professional work experience in data science with planned activities giving you insight into the Travelers community and the many

ways we solve business problems using cutting-edge statistical and analytical techniques. You will assist in design and develop and program methods, processes, and systems to consolidate and analyze unstructured and structured diverse data sources to generate actionable insights and solutions for client services and product enhancement.

Apply: <https://travl.rs/2lrnCxr>

Contact: Kathy Ziff, kziff@travelers.com

University of Virginia Biocomplexity Institute and the School of Data Science

Arlington, Virginia; Charlottesville, Virginia

Positions: 8+ undergraduate and 4+ graduate

Type of Student:

Undergraduate students (including recent graduates) in any discipline and graduate students (MS or PhD) with quantitative/analytical skills enrolled at any US university

Deadline: January 31, 2021

The program will run for 11 weeks (May 24 to August 6) for graduate fellows and 10 weeks (June 1 to August 6) for undergraduate interns. Fellows and interns will work in teams collaborating with postdoctoral associates, research faculty, and project stakeholders. The research teams will combine disciplines—including statistics, data science, and the social and behavioral sciences—to address complex problems proposed by local, state, and federal agencies.

Apply: Send a CV/résumé, transcript, cover letter with your relevant experience and interest in the position, and confidential letters of reference (three for graduate fellows, two for undergraduate interns) to dspg2021@virginia.edu.

Contact: Gizem Korkmaz, gkorkmaz@virginia.edu; University of Virginia, 1100 Wilson Blvd., Suite #2910, Arlington VA 22209

USFDA, Office of Biostatistics, CDER

Silver Spring, Maryland

Positions: Multiple

Type of Student: Graduate students with strong background coursework in biostatistics or statistics; completion of doctoral prequalifying exams preferred

Deadline: March 15, 2021, with rolling offers

We anticipate having multiple internship positions available for advanced PhD graduate students in statistics or biostatistics from May 24 to September 3, 2021, to engage in research projects on topics relevant to OB scientific needs.

Interns will gain hands-on experience with regulatory research projects under the guidance of an expert OB mentor using real or simulated data to address real problems in a stimulating, collaborative, and supportive environment.

Apply: Send CV and cover letter to CDER-OTS-OB-Recruitment@fda.hhs.gov with APPLICATION ORISE 2021 in the subject line. If you have a question, use QUESTION ORISE 2021 as the subject. ■

Jeanne E. Griffith Mentoring

Nominations for the 2021 Jeanne E. Griffith Mentoring Award will be accepted until March 19, 2021. The award recipient—a supervisor, technical director, team coordinator, or other statistical staff member—will be selected for his or her efforts to support the work and develop the careers of junior staff in the statistical community in federal, state, or local government. 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 insight; the balance of collegial and personal roles; and the inclusion of everyone regardless of rank, race, ethnicity, gender identity, or seniority

The award was established to honor Jeanne E. Griffith,



Jeanne E. 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 National Science Foundation, one of Griffith's highest priorities was to mentor and encourage younger staff at all levels to learn and grow, as well as recognize and seize career opportunities as they came along.

The nomination form and guidelines are available from the Government Statistics Section website at <https://bit.ly/36GIXMQ>. The award committee will determine the award winner in April. The award will consist of a \$1,000 honorarium, citation, and plaque, which will be presented at a ceremony arranged by the cosponsors.

The nomination package must be emailed to ASA Professional Development and Sections and Chapters Manager Rick Peterson at rick@amstat.org or mailed to the Jeanne E. Griffith Mentoring Award Committee c/o The American Statistical Association, 732 N. Washington St., Alexandria, VA 22314-1943.

Questions about the award can be addressed to Peterson or

Recent Jeanne E. Griffith Mentoring Award Recipients

- 2020:** Rajeshwari Sundaram
- 2019:** Sharon Boivin
- 2018:** Howard Hogan
- 2018:** Carol Gotway Crawford
- 2017:** Cynthia Ogden
- 2016:** Diane K. Willimack
- 2015:** Aldo "Skip" Vecchia
- 2014:** J. Gregory Robinson
- 2014:** Kenneth C. Schoendorf
- 2013:** Brian Harris-Kojetin
- 2012:** William P. Mockovak
- 2011:** Jenise L. Swall

MORE ONLINE

The ASA has an extensive awards program. Visit *Amstat News* online for nomination deadlines: <https://bit.ly/3pxuNoZ>.

the chair of the award committee, Raji Sundaram, at sundaramr2@mail.nih.gov.

Award Sponsors

- American Educational Research Association
- American Institutes for Research
- Council of Professional Associations on Federal Statistics
- Government Statistics Section, ASA
- Interagency Council on Statistical Policy
- Research Triangle Institute
- Social Statistics Section, ASA
- Washington Statistical Society, ASA
- Westat

Contact Bill Mockovak at Bmockovak@msn.com to co-sponsor the award. ■

Gertrude M. Cox Award

The Gertrude M. Cox Award Committee is seeking nominations for the 2021 Gertrude M. Cox Award.

The award was established in 2003 through a joint agreement between the Washington Statistical Society (WSS) and RTI International. It annually recognizes an early to mid-career statistician (fewer than 15 years after terminal degree in statistics or related field) who has made significant contributions to one or more of the areas in which Gertrude Cox worked: survey methodology, experimental design, biostatistics, and statistical computing.

The award—which includes a \$1,000 honorarium, travel expenses to attend the WSS Annual Dinner, and a commemorative WSS plaque—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.

In 1945, Cox became director of the Institute of Statistics of the Consolidated University of North Carolina. In the 1950s, as head of the department of experimental statistics at North Carolina State College, 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 the newly founded RTI. She was a founding member of the International Biometric Society (IBS) and, in



Gertrude M. Cox

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.

Email nominations to Marcus Berzofsky at berzofsky@rti.org by February 28, 2021. The application should consist of the candidate's CV (or a link to it) and a supporting statement from the nominator. Additional supporting statements can be submitted to strengthen the application.

If you previously nominated a candidate and wish that nomination to be reconsidered, you must resubmit the nomination.

The award committee consists of WSS President Jill Dever (co-chair), WSS Past President Eileen

O'Brien, WSS President-elect Mark Otto, Daryl Creel of RTI, Phil Kott of RTI, and Marcus Berzofsky (co-chair) of RTI.

Recent recipients are Sharon Lohr, Alan Zaslavsky, Tom Belin, Vance Berger, Francesca Domenici, Thomas Lumley, Jean Opsomer, Michael Elliott, Nilanjan Chatterjee, Amy Herring. ■

Waksberg Award

The journal *Survey Methodology* established an annual invited paper series to honor the late Joseph Waksberg and recognize his outstanding contributions to survey statistics and methodology. Each year, a prominent survey statistician is chosen to write a paper that reviews the development and current state of an important topic in the survey statistics and methodology field. The paper reflects the mixture of theory and practice that characterized Joseph Waksberg's work.

The recipient of the Waksberg Award will receive an honorarium and give the 2022 Waksberg Invited Address at the Statistics Canada Symposium, expected to be held in the autumn of 2022. The paper will be published in an upcoming issue of *Survey Methodology* (targeted for December 2022).

The author of the 2022 Waksberg paper will be selected by a four-person committee appointed by *Survey Methodology* and the American Statistical Association. Nominations of individuals to be considered as authors or suggestions for topics should be sent before February 28, 2021, to the chair of the committee, Jean Opsomer, at JeanOpsomer@westat.com. ■

A Statistical Star from the East Shines in the West

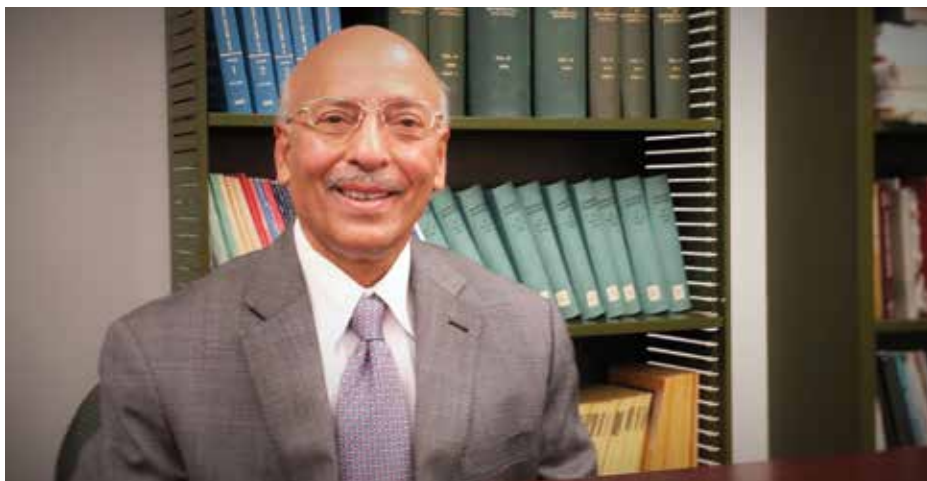
Barry D. Nussbaum

In the summer of 2020, the University of Maryland Baltimore County (UMBC) won a \$900,000 Maryland E-Innovation Initiative Fund grant, which will match \$900,000 privately raised to establish an endowed chair of statistics that honors Bimal Sinha at UMBC. The privately donated funds are the first endowed chair gift at UMBC. The new chair will be called the “Sinha Ennovation Chair.”

Sinha won the UMBC Presidential Research Professor Award in 2008 and the University System of Maryland Board of Regents Excellence in Research Award in 2012. He is a fellow of the American Statistical Association and Institute of Mathematical Statistics and an elected member of the International Statistical Institute.

His research activities span topics in theoretical and applied statistics, including multivariate analysis, linear models, ranked set sampling, environmental statistics, statistical meta-analysis, and data analysis under confidentiality protection. Sinha has served on the editorial board of a number of national and international statistics journals. He has coedited several volumes and coauthored four books. In addition to research, he has proven to be a skilled analyst for practical problems, having consulted with the US Environmental Protection Agency and US Census Bureau. He is also a dedicated professor, having guided more than 30 students through PhD degrees.

The statistics program at UMBC has seen rapid growth.



Bimal Sinha of the University of Maryland Baltimore County was recently honored with an endowed chair of statistics named after him. The Sinha E-Innovation Chair comes after the university won a \$900,000 grant.

This is proven by the number of undergraduate majors in statistics nearly doubling in the last five years, from 34 in fall 2014 to 62 in fall 2019. It has also grown immensely in international stature with the creation of the Annual International Conference on Statistics in Africa. The program has teamed up with a half dozen African universities to produce a top-quality conference in several African nations and led to African students being able to study in the US.

The true measure of Sinha’s accomplishments, however, is the

way he grew the UMBC statistics group from three faculty members in 1985 into a statistics powerhouse both domestically and internationally. The program now has 10 faculty members, four of whom are fellows of the ASA.

With these funds, the Sinha Ennovative Chair will be established to help UMBC meet the growing demand of educating, training, and mentoring statistics undergraduate and graduate students. In particular, this professorship will increase the depth and variety of the UMBC statistics graduate program. ■

Ruth Etzioni

Fred Hutchinson Cancer Research Center biostatistician and ASA Fellow Ruth Etzioni was named the inaugural recipient of the Rosalie and Harold Rea Brown Endowed Chair.

The new endowed chair will help advance Etzioni’s population science research, which focuses on cancer

screening and early detection, particularly in breast and prostate cancers.

Etzioni has been with Fred Hutchinson for 30 years, and this leadership gift will allow her to continue her work, “but with a little more breathing room,” noted Diane Mapes of Fred Hutchinson.

Read more at <https://bit.ly/2KbV5wM>.



Emery N. Brown gives the keynote address, “Uncovering the Mechanisms of General Anesthesia: Where Neuroscience Meets Statistics,” during the Symposium on Data Science and Statistics in May 2018.

The Society for Neuroscience recently awarded the Swartz Prize for Theoretical and Computational Neuroscience to **Emery N. Brown**, Edward Hood Taplin Professor of Medical Engineering and Computational Neuroscience at MIT.

Brown, a member of The Picower Institute for Learning and Memory and the Institute for Medical Engineering and Science, as well as the Warren M. Zapol Professor at Harvard Medical School, is a neuroscientist, statistician, and practicing anesthesiologist at Massachusetts General Hospital. His research has produced principled and efficient new methods for decoding patterns of neural and brain network activity and advanced neuroscientific understanding of how anesthetics affect the brain, which can improve patient care.

“Dr. Brown’s seminal scientific contributions to neural signal processing and the theory of anesthetic mechanisms, together with his service as an educator and a physician, make him highly deserving of the 2020 Swartz Prize,” Society for Neuroscience President Barry Everitt said in a press release announcing the award. “Dr. Brown has demonstrated an unusually broad knowledge of neuroscience, a deep understanding of theoretical and computational tools, and an uncanny ability to find explanatory simplicity lurking beneath complicated observational phenomena.”

The prize, which includes \$30,000, was awarded during the Society for Neuroscience’s Awards Announcement Week, October 26–29.

Read the full announcement at <https://bit.ly/36HA300>. ■

section news

Q&P Outlines Focus Areas for 2021

Richard L. Warr, Q&P Section Chair-Elect

The Quality and Productivity (Q&P) Section executive committee met on October 28 to discuss areas of focus for 2021. Among the items discussed were areas going well for the section, possible areas of growth and outreach, and a few areas needing attention.

The following areas were identified as areas needing attention:

- Update the section operating manual. This manual is roughly 19 years old and needs an update to account for the changes in the community and to facilitate efficient operation of the section. Specifically, some position descriptions in the section should be created, updated, or eliminated. The goal of this effort is to streamline the operations of the section.
- Redefine the meeting venues for the annual strategic and tactical planning meetings. With the rapid spread and acceptance of teleconferencing in 2020, we have the opportunity to be more inclusive, take less time, and save significant expenses when conducting annual meetings. The current manual directs the strategic planning meeting should occur at QPRC each year. We agreed that holding this meeting within a few weeks of QPRC would be beneficial; however, we should no longer require attendance be tied to QPRC attendance (although QPRC attendance is still encouraged). The same decision was made for the tactical planning meeting that has historically been held in conjunction with JSM.

The duties of the treasurer position are the most complex in the section. The current treasurer (Sharad Prabhu) has served many years and performed admirably. He knows the position well; however, as the complexity of the position is likely to increase, it is prudent to create an assistant treasurer position to assist and possibly grow into the treasurer position. We will explore the possibility of creating this position.

To better facilitate communication, we will attempt to create a regularly scheduled time for section executive committee meetings, held every two months. Additionally, we will explore the possibility of creating position email accounts to facilitate continuity as transitions occur. ■

Tenure-Track Faculty Position Cornell University Ithaca campus

Cornell University's School of Operations Research and Information Engineering (ORIE) seeks to fill a tenure-track faculty position for its Ithaca campus. Although priority will be given to junior candidates, candidates at all levels will be considered. We welcome strong applicants at the interface of operations research and data science, especially those with a focus on supply chain, revenue management, and pricing.

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

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

A complete application should include a cover letter, CV, statements of teaching and research interests, statement of diversity, equity, and inclusion, sample publications, at least three reference letters, and, for junior applicants, a Doctoral transcript. Applications for the position should be submitted on AJO at <https://academicjobsonline.org/ajo/jobs/17076>. Applications completed by November 13, 2020 will receive full consideration, although we urge candidates to submit the required material as soon as possible. Applications will be accepted until the position is filled.

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



Diversity and Inclusion are a part of Cornell University's heritage. We are a recognized employer and educator valuing AA/EEO, Protected Veterans and Individuals with Disabilities. We also recognize a lawful preference in employment practices for Native Americans living on or near Indian reservations.

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>.

California

■ The Department of Statistics in the Donald Bren School of Information and Computer Sciences at the University of California, Irvine invites applications for a tenure-track faculty position at the assistant rank level beginning July 1, 2021. The review of applications will begin November 16, 2020 but applications will be accepted until December 11, 2020. Please visit <https://recruit.ap.uci.edu/JPF06327> for more information and to apply. EOE.

Illinois

■ The Department of Statistics at Northwestern University invites applications for a non-tenure track assistant professor of instruction in statistics position beginning fall 2021. This is a full-time benefits eligible position. Applicants should have an earned doctorate in statistics or a related field. Apply at <https://bit.ly/2Ip6WH1> and include a cover letter, curriculum vitae, teaching/research statement, and three reference letters. Questions to Kisa Kowal at: k-kowal@northwestern.edu. Northwestern University is an equal opportunity, affirmative action employer and does not discriminate against qualified individuals on the basis of race, color, religion, national

origin, sex, pregnancy, sexual orientation, gender identity, gender expression, parental status, marital status, age, disability, citizenship status, veteran status, genetic information, or any other protected class. Individuals from all diverse backgrounds are encouraged to apply. Hiring is contingent upon eligibility to work in the United States. For more information, please see the University's Policy on Discrimination and Harassment at <https://bit.ly/38DY8rT>.

Massachusetts

■ Assistant Professor, Department of Biostatistics, Boston University School of Public Health. All outstanding applicants committed to excellence in scholarship and teaching are encouraged to apply, especially candidates with expertise in big data analytics or related disciplines. Possibility of a secondary appointment with the Faculty of Computing and Data Sciences. Boston University is committed to fostering a diverse and inclusive community. Apply at <https://bit.ly/2UlaL2k>. EOE.

New Mexico

■ The University of New Mexico Clinical and Translational Science Center (CTSC) invites applications for a non-clinical, PhD-level staff



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biostatistician to support clinical and translational research. The primary role of the biostatistician will be to provide biostatistical support to researchers and ongoing research programs. Find out more and apply: <https://bit.ly/3klxqGz>. EOE.

New York

■ The Statistics Group in the Department of Technology, Operations and Statistics at the Stern School of Business, New York University invites applications for a tenure-track position at the assistant professor level starting September 2021 (no extension beyond this date). Candidates should have a PhD, or must have successfully defended their doctoral dissertation prior to appointment. More information can be found at apply.interfolio.com/80670. EOE

Virginia

■ The GMU Department of Statistics invites applications for multiple tenure-track/tenured positions beginning Fall 2021. Senior candidates with outstanding

The Department of Statistics at Texas A&M University Accepting Applications for Multiple Faculty Positions



TEXAS A&M UNIVERSITY
Statistics

The Department of Statistics at Texas A&M University anticipates multiple tenure-track Assistant Professor positions (outstanding starting Associate Professors could also be considered) to begin August 15, 2021 - August 15, 2022. All positions will be full-time, 9-month appointments. Completion of all requirements for a PhD/DSc degree in Statistics or a related field prior to beginning employment is required. The department encourages persons from all areas of research to apply, and is particularly interested in expertise in the broad area of data science. Evidence of interdisciplinary research and focus on computational aspects is a plus. In addition to outstanding research, the successful candidate will be expected to teach undergraduate and graduate courses and supervise graduate students. Excellent computing facilities are available and highly competitive startup funding is anticipated.

The Department of Statistics has a tradition of outstanding methodological, theoretic, computational, and interdisciplinary research. Current faculty members actively collaborate with colleagues throughout the whole university. Texas A&M University has a partner placement program and is responsive to the particular needs of dual career couples. To apply, please visit <https://apply.interfolio.com/79480>. The hiring committee will start to review applications in mid-October. Applications will continue to be accepted until the positions are filled. Please direct all inquiries to Dr. Suhasini Subba Rao, Search Committee Chair at [hiring@stat.tamu.edu](mailto: hiring@stat.tamu.edu).

The Texas A&M System is an Equal Opportunity/Affirmative Action/Veterans/Disability Employer committed to diversity. Texas A&M University, the College of Science and the Department of Statistics are dedicated to the goal of building an inclusive and culturally diverse faculty and staff who are committed to teaching and working in an environment of academic freedom and equality of opportunity.

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research, demonstrated funding, and excellent teaching will be eligible for tenured associate or full professor positions. See <https://jobs.gmu.edu/postings/48839> for the complete position description. Apply with position number F582AZ at <http://jobs.gmu.edu>. The review of applications will continue until the positions are filled. George Mason University is an EOE.

CANADA

Ontario

■ The Department of Statistics and Actuarial Science at the University of Waterloo invites applications for 3 tenure-track or tenured positions in Statistics, Biostatistics or Data Science. 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 <https://bit.ly/3pf1IP3>. EOE. ■

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One, Two, Buckle My Mu,
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Kyle Null

Lord's Paradox

Akbar Ali

Through a Jungle

Simon Nguyen

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Cristine Remy

Data on Relaxing without Stress



Chair and Professor of the Department of Statistics and Data Science 9-month, tenure-track, Cornell University, Ithaca, New York

Cornell University invites nominations and applications for the position of Professor and Chair of the Department of Statistics and Data Science (stat.cornell.edu). The department has a strong tradition of theoretical and interdisciplinary research and teaching that takes advantage of Cornell University's extensive and diverse academic community. The Department itself is an interdisciplinary partnership that includes the College of Agriculture and Life Sciences (CAL S), the Faculty of Computing and Information Science (CIS), and the School of Industrial and Labor Relations (ILR). Specializations in the department include Statistical Science, Social Statistics, and Biometry and Statistics, with focal points ranging from mathematical statistics, computational statistics and machine learning to the development of statistical methods for astrophysics, ecology, economics, epidemiology, financial modeling, genomics, high dimensional data, neurobiology, legal studies, medicine, public health and risk management.

The tenure-track position will be hired at the rank of Full Professor, with the faculty line hosted in CAL S. At Cornell University, all professorial faculty must stand for a formal tenure review, which may begin prior to arrival. In addition, the initial administrative term as chair is expected to be 5 years. Applicants should have an internationally recognized research program in one or more of the following areas: statistical methodology, statistical theory or data science. Candidates should be able to demonstrate a commitment to undergraduate and graduate education, leadership experience, a creative vision for future directions of statistics and data science as an academic discipline and a commitment to diversity and collaboration. The chair reports to the lead Dean (CIS) who consults as needed with the CAL S and ILR deans and is responsible for the department's administrative, budgetary, and personnel matters. Successful candidates must demonstrate a vision for supporting, directing, and enhancing the goals of the Department. The successful candidate will also have a record of leadership, active participation in academic affairs, commitment to diversity and inclusion and evidence of excellence in research, teaching, and outreach. A Ph.D. in statistics, biostatistics or related field is required.

Statistics and Data Science has 18 tenured and tenure-track professors, 4 lecturers, 36 Ph.D. graduate students, 58 MPS graduate students and over 180 undergraduates. Additional junior faculty hiring is expected. The department is integral to several of Cornell University's Radical Collaborative Initiatives including Data Science, Sustainability and Social Sciences. Opportunities exist for a strategic leader to integrate departmental activities with broader university programs and the profession by substantially growing the department's visibility and stature.

The College of Agriculture and Life Sciences is a pioneer of purpose-driven science and home to Cornell University's second largest population of students, faculty and staff. We work across disciplines to tackle the challenges of our time through world-renowned research, education and outreach. The questions we probe and the answers we seek focus on three overlapping concerns: natural and human systems; food, energy and environmental resources; and social, physical and economic well-being.

Computing and Information Science (CIS) is a college-level unit founded in recognition that computing is an essential tool in almost every scientific and scholarly discipline. It is a community of people committed to tackling some of the world's biggest challenges by working together across multiple colleges and two Cornell campuses. CIS is home to the three academic departments that power the information economy: Computer Science, Information Science and Statistics and Data Science. It is known for bold new ideas expressed in high-impact research and scholarship, inspiring educational contributions, and entrepreneurial and commercial engagement. The synergies among faculty, researchers and students make CIS more than the sum of its parts.

Cornell University is located in Ithaca, New York, a city of about 35,000 people in the heart of the Finger Lakes region. Both Cornell University and the City of Ithaca offer a wide range of cultural and outdoor activities, with the pleasures of both city and country close at hand. Ithaca is Gorges!

Confidential review of applications will begin immediately and continue until the position is filled. For consideration, a curriculum vitae, letter of interest, statement of career goals and research interest, and leadership goals, and a **statement of diversity, equity, and inclusion** should be submitted. Evaluation of applicants will begin November 30, 2020 and continue until the position is filled. Contact information for references is requested, but will only be used, with permission, from finalists.

Nominations, inquiries, and expressions of interest should be submitted confidentially to the search committee chairs, James Booth jim.booth@cornell.edu or Patrick Sullivan pjs31@cornell.edu. Interested applicants should apply at <https://academicjobsonline.org/ajo/jobs/16158>.

Cornell University is a place where intercultural skills are developed and used everywhere: throughout our diverse campus groups, with our community partners, within our classrooms and in our workplaces. At Cornell, we recognize people with diverse backgrounds and experiences bring great value to education, discovery, creativity, and engagement which is reflected in our long history of diversity and inclusion.

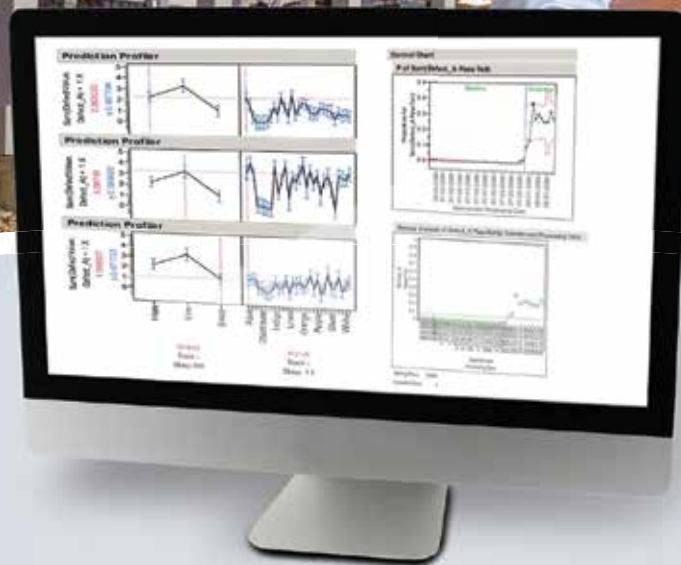
Cornell understands the needs of dual career couples, which it attempts to meet through a Dual Career program and membership in the Upstate New York Higher Education Recruitment Consortium, which assists dual career searches. Visit HERC - Higher Education Recruitment Consortium <https://www.hercjobs.org/> to see positions available in higher education in the upstate New York area. Cornell and Ithaca are family-friendly communities: Cornell offers a rich array of services, programs and benefits to help employees advance in their career and enhance the quality of personal life, including employee wellness, workshops, childcare and adoption assistance, parental leave and flexible work options. For more details, visit: **Family Life Resources for Faculty** at: https://hr.cornell.edu/sites/default/files/documents/family_resources_faculty.pdf.

Employment Assistance: If you require an accommodation for a disability in order to complete an employment application or to participate in the recruiting process, you are encouraged to contact Cornell University's Department of Inclusion and Workforce Diversity at voice (607) 255-3976, fax (607) 255-7481, or email at owdi@cornell.edu. For general questions about the position or the application process, please contact the Recruiter listed in the job posting. Applicants that do not have internet access are encouraged to visit your local library, or local Department of Labor. You may also visit the office of Workforce Recruitment and Retention Monday - Friday between the hours of 8:30 a.m. - 4:30 p.m. to use a dedicated workstation to complete an online application. **Notice to Applicants:** Please read the required Notice to Applicants statement by visiting <https://hr.cornell.edu/important-notice-applicants>. This notice contains important information about applying for a position at Cornell as well as some of your rights and responsibilities as an applicant.



Diversity and Inclusion are a part of Cornell University's heritage. We are a recognized employer and educator valuing AA/EEO, Protected Veterans and Individuals with Disabilities. We also recognize a lawful preference in employment practices for Native Americans living on or near Indian reservations. Cornell University is an innovative Ivy League university and a great place to work. Our inclusive community of scholars, students, and staff impart an uncommon sense of larger purpose, and contribute creative ideas to further the university's mission of teaching, discovery, and engagement.

Ed Hutchins, Cree Product Engineering Manager



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