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

features

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columns

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*.

2022
Year in Review

Call for Editor Applications and Nominations

The ASA invites applications for the position of editor of *The American Statistician.*

The new editor will serve from 2024 through 2026, with the transition beginning in the late summer or early fall of 2023.

Nominations should be sent to Eric Sampson at *eric@amstat.org* by January 13, 2023, with applications sent by February 10, 2023. More information is available at *https://magazine.amstat.org.*

Who Was Sylvia Ostry?

Sylvia Ostry, Canada's first and only female chief statistician (1972), earned her PhD during a time many believed it was shameful to be female and have a career. How did she handle setbacks, overcome discrimination, and remain true to herself? Listen to the *Eh Sayers* podcast, during which host Tegan Bridge interviews Ostry's sons, Adam and Jonathan, and they share with you her remarkable journey and eight pieces of advice inspired by her life. *www.statcan.gc.ca/en/sc/podcasts/eh-sayers-s03-ep01*

Podcast News

After hosting 100 episodes of *ASA Biopharm's Podcast*, **Richard Zink** has handed over the mic and headphones to **Amy LaLonde** and **Christina Nurse**. Zink, who started the podcast, covered a variety of topics during his tenure, including mentoring, COVID-19, vaccine development, and storytelling. You can listen in and subscribe to the podcast at *www.buzzsprout.com/16296.*

Have you heard the latest *Practical Significance* podcast? Co-hosts **Donna LaLonde** and **Ron Wasserstein** talk to Consortium of Social Science Associations Executive Director Wendy Naus. She shares her thoughts about policy challenges ahead for the social science fields, encourages us to advocate on behalf of statistics and data science, and offers a good read. Listen to the latest episode at *https://magazine.amstat.org/podcast-2.*

Look for your 2023 calendar and poster in the center of this issue.

departments

Eunice Kim   Motomi Mori   Nairanjana Dasgupta

Women in Statistics and Data Science
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member news

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Meeting Goals and Making More

Katherine Ensor

Oh, what a year 2022 has been! The return to in-person meetings sparked excitement, with approximately 5,000 participants gathering in Washington, DC, for JSM. Toronto 2023, here we come! If you are like me and let your passport lapse during the pandemic, it is time to take care of renewing it.

This fall, those of us in academia have seen the full return of vibrant campuses and enjoyed being with our students again. I will admit to appreciating the ease of Zoom meetings, but it has been wonderful to step away from the computer and reap the benefits of human connection.

At the beginning of my term as ASA president, I set out to make contributions in three areas: data science and artificial intelligence; community analytics; and advancing the ASA Leadership Institute. I have managed to address each area with structural and lasting changes that will benefit our organization now and into the future.

I visited with many of you over the year, talking about the ASA and contributions we can make with our skills and talents. It has been an incredible year, and *I thank you* for the opportunity to serve in this capacity.

Data Science and AI

In this area, the three main advancements include the following:

1. Formulating the standing committee on DS and AI to advise the ASA board

2. Joining CSAB for accreditation of DS and other programs by ABET

3. Supporting the ASA National Data Mine program headed up by Mark Ward and funded in part by the National Science Foundation

These initiatives were discussed at length in my April column *(https://magazine.amstat.org/blog/2022/04/01/big-tent)*.

Checking in with Mark Glickman in his role as chair of the DS and AI Standing Committee, he noted, "The ASA Committee on Data Science and AI has had an eventful first year. We have begun addressing how statisticians can find opportunities in the expanding world of data science and AI. This includes providing guidance on acquiring data science and AI skills, disseminating data science and AI achievements by ASA members to the public, and sharing insights with the ASA board and membership regarding the role of statistics in data science and AI. We look forward to continuing our impactful work in the coming year."

This month, Dave Hunter and I will attend the winter CSAB board meeting as the ASA's representatives and discuss accreditation of associate's and master's degrees in data science, as well as other computing programs. Once again, I thank the Caucus of Academic Representatives and others in our community who quickly provided their input to help reshape the data science accreditation criteria. Without the ASA's voice as a member of CSAB, these accreditations would still go forward but with a narrower scope.

The NSF-sponsored ASA National Data Mine program is off to a successful start with many more applicants than the program can support, leading to opportunities for more expansion.

At the August ASA board meeting, we heard from leaders of other programs across the country. Mentoring and education of future statisticians and data scientists is a tremendous contribution to society; ASA leadership is here to support and collaborate, so please keep that in mind.

Looking to the future, the ASA plans to submit an NSF Innovation Engine proposal with the goal of supporting research stipends for undergraduate students from the manufacturing belt. The objective is to support work with industry partners and foster professional development toward jobs in applied data science in industry.

Community Analytics

This is a theme that resonates with many of you. The ASA has many sections that contribute to this area—Statistics and the Environment, Mental Health Statistics, Statistical Learning and Data Science, Statistical Computing, Statistical Graphics, and Survey Research Methods. The International Conference on Health Policy Statistics in January and the February Conference on Statistical Practice are opportunities to share ideas with like-minded statisticians. Potentially all areas of statistics can be helpful in supporting community analytics.

I am routinely following the important leadership from our profession in, for example, data privacy and data for the public good discussions and invite you to join this important conversation. As many cities and communities develop their data analytics programs, some even naming chief data officers, this is an area in which the ASA should continue to engage.

ASA Leadership Institute

The institute, now up and running, was featured in my October column (*https://magazine.amstat.org/blog/2022/10/01/statisticians-lead-the-way*). As the first chair of the steering committee, I look forward to remaining actively engaged in this effort for the next few years. I also look forward to helping the newly established Caucus for Industry Representatives in its initial stages, as the group organizes to support this cohort of our community. The November IDEA Forum, which focused on the essential contributions of statistics to solutions addressing the global changing climate, was a huge success. ASA 2023 President Dionne Price is already planning for next year's forum. I hope we look back in a decade and find that this board-sponsored program has increased our influence and footprint.

The Leadership Institute–sponsored workshop on academic leadership was well attended and provided superb advice. The materials from this workshop are available at *https://bit.ly/LeadWithStatisticsWorkshop*. As always, I was impressed with our community and the ability of many of us to lead with distinction beyond the discipline of statistics. I remain convinced that our field develops exceptional leaders to contribute across all aspects of society and look forward to facilitating the advancement of our members in this capacity.

Looking Back and Forward

The ASA and our community saw many exciting events this year. Nancy Reid was honored with the COPSS Distinguished Achievement Award and Lectureship. The first million-dollar Rousseeuw Prize for Statistics was awarded to James Robins and his collaborators for their work in causal inference. And ASA member Cynthia Rudin received the Award for Artificial Intelligence for the Benefit of Humanity.

In 2023, the fourth International Prize in Statistics will be awarded. I am excited to see who the rock star selection committee chooses.

This year, the ASA continued its forward path of continual improvement toward a just, diverse, equitable, and inclusive professional society. Members of the Anti-Racism Task Force suggested engaging an external firm to assist with our progress. At the November board meeting, the NOVA Collective—our diversity, equity, inclusion, and accessibility consultants—shared their first report. The board is fully engaged in this effort, and our community is already seeing significant progress.

It is important to acknowledge the pandemic. I expect you share my appreciation of where we stand at the end of 2022. We all have strong recollections of the difficult holidays of 2021 and 2020, where we minimized our family and community gatherings. Our members made huge contributions toward moving the pandemic to an endemic phase through drug discovery, development, and distribution. Just as important, they dampened the impact wherever possible by placing data-based knowledge of our communities in the expert hands of proactive health departments and local leadership. Of course, the impact of the pandemic is not fully behind us, but I know our community will continue to contribute to the global recovery.

I have been honored to serve as your president. Like many of the previous ASA presidents, I will remain actively engaged in our community and contribute to the best of my ability. I very much look forward to working with 2023 President Dionne Price as the ASA past president.

Thanks again to the amazing ASA staff for all they help our profession accomplish. Let me close by wishing each of you a wonderful holiday season, filled with joy and enthusiasm for the future. Of course, I cannot sign off before reminding you once again that statistics is an essential foundation for innovation and what you do matters!

Kathy B. Ensor

Meet *CHANCE* Magazine's New Editors

Wendy Martinez and Donna LaLonde are the new co-editors of the ASA's *CHANCE* magazine. Here, they answer a few questions about themselves and their plans for the publication this year.

Why did each of you accept the position as editor of *CHANCE*?

W: Thank you for the opportunity to share a little about us and our plans for *CHANCE.* I first want to mention that I am listed as the executive editor, but this is really a team effort with Donna LaLonde, so you will be hearing from her, too. I always wanted to serve as an editor. I've had opportunities to be on various editorial boards, but this is the first time I will have a leadership role for a publication. I am also passionate about making statistics understandable and interesting to a wide audience, and *CHANCE* is a great platform to achieve this goal.

D: I am excited about any opportunity to collaborate with Wendy on any project. Her passion and curiosity are contagious! More specifically to this project, I like to read and write, so working with others who also like to read and write is a perfect fit.

What are your current job title and areas of interest?

W: I am currently employed as a senior mathematical statistician for data science in the research and methodology directorate at the US Census Bureau. I am interested in a lot of things! However, here is a short list with my major areas of interest. I love to read about text analysis, exploratory data analysis, computational statistics (or data science), and the history of statistics. I am also an advocate for open-source software for data analysis, especially R.

D: I am currently the director of strategic initiatives and outreach at the American Statistical Association. Like Wendy, I am interested in open science and computational data science. My list also includes education and a new interest in graphic design. Of course, I like to think about ways to support our amazing community!

Who do you think should read *CHANCE* magazine?

W: I think everybody should read *CHANCE!* This is a magazine and should be suitable for a general audience interested in applications and ideas in statistics and data science. Besides the main articles, *CHANCE* has columns in visualizing data, taking statistics and data science to the classroom, law, sports, and more. So, there is something for everyone. The editors work to ensure papers are written at a level that is easily accessible to a broad readership.

Wendy Martinez

Donna LaLonde

D: Everyone, so our challenge is to create issues that are interesting and accessible.

What do you enjoy the most about reading *CHANCE* magazine?

W: I guess this reflects my interests, but I really love Howard Wainer's column, Visual Revelations. We all encounter art, graphics, and data visualizations in almost all aspects of our lives, from news stories to scientific journal articles. These visualizations tell a story, and Howard helps us to better understand how to think critically when viewing and learning from these stories.

D: I agree with Wendy that the columns are great. To her list I will add Taking a Chance in the Classroom. I like the variety that each issue offers.

Do you have any specific plans or exciting changes for the magazine in the upcoming months?

W: Donna and I have a lot of ideas! We welcome papers from authors in keeping with *CHANCE's* vision to publish nontechnical papers that entertain the reader, while also providing information about statistical practice. We plan to have two to three articles each issue organized around a theme. We can also have special issues. If any of you are interested in editing one, just let us know! Finally, I am an advocate for open-access content, and we will be working with the ASA and Taylor & Francis to have more open-access content available. In particular, we want the column Taking a Chance in the Classroom to be open access, so statistics teachers at all levels can make use of the content.

D: Wendy and I both enjoy organizing data challenges, so look for challenge opportunities in future issues. We also would like to have more contributions from students. One of the exciting aspects of taking on this role is that whatever we do, we are building on a solid foundation. We need to listen and learn to help us map the next steps. ∎

CHANCE

MORE ONLINE
Take a peek at the latest issue of *CHANCE* at *https://chance.amstat.org.*

November *JSDSE* Focuses on Teaching Reproducibility, Responsible Workflow

Aneta Piekut, Rohan Alexander, Colin Rundel, Micaela Parker, and Nicholas J. Horton

Many new principles and standards have been developed to facilitate cultural changes in fostering reproducible research, but less so has been done in teaching. Articles in the November 2022 issue of the American Statistical Association's open-access *Journal of Statistics and Data Science Education* present how to integrate practices for achieving reproducibility into teaching data science and statistics. The 11 papers and accompanying editorial discuss how to teach reproducibility and responsible workflow from different perspectives: refreshing and organizing teaching materials; providing guidelines for student work; engaging students in editorial work; and revising curriculum at the program level.

1. "The Growing Importance of Reproducibility and Responsible Workflow in the Data Science and Statistics Curriculum," by Nicholas J. Horton, Rohan Alexander, Aneta Piekut, and Colin Rundel, motivates the issue by describing how teaching the data analysis cycle requires knowledge of reproducibility and workflow that has not historically been at the center of statistics and data science education and advocates for the inclusion of these topics in the curriculum.

2. "An Invitation to Teaching Reproducible Research: Lessons from a Symposium," by Richard Ball, Norm Medeiros, Nicholas W. Bussberg, and Aneta Piekut, summarizes key messages from the symposium Project TIER, held in 2021. The 10 talks showcased examples of students benefiting in multiple ways from teaching reproducible methods on top of the statistical training: improving skills in computation, data management, and documentation that are transferable for research jobs and beyond; gaining confidence in analytical and interpretive skills; and broadening their intellectual development. "Interdisciplinary Approaches and Strategies from Research Reproducibility 2020: Educating for Reproducibility," by Melissa L. Rethlefsen, Hannah F. Norton, Sarah L. Meyer, Katherine A. MacWilkinson, Plato L. Smith II, and Hao Ye, reports on a virtual conference dedicated to teaching reproducible research. They thematically analyzed the conference content and identified trans/interdisciplinary themes, including lifelong learning, cultivating bottom-up change, "sneaking in" learning, just-in-time learning, targeting learners by career stage, learning by doing, learning how to learn, establishing communities of practice, librarians as interdisciplinary leaders, teamwork skills, rewards and incentives, and implementing top-down change, along with key lessons for each of them.

3. "Data Science Ethos Lifecycle: Interplay of Ethical Thinking and Data Science Practice," by Margarita Boenig-Liptsin, Anissa Tanweer, and Ari Edmundson, notes that data science is part of the social world with the potential to significantly affect (for better or worse) individuals and communities. Instructors, learners, and researchers are encouraged to consider the ethical dimensions of their practice. The Data Science Ethos Lifecycle tool was created to facilitate reflection on how social context interplays with data science work and what might be social consequences of the final products. The authors conclude that workflow is only responsible if ethical reflections are present at each stage of research.

4. "Opinionated Practices for Teaching Reproducibility: Motivation, Guided Instruction, and Practice," by Joel Ostblom and Tiffany Timbers, observes that while it is relatively easy to engage statistics and data science students in data analysis/project tasks, as they are driven by curiosity to discover new patterns, it is more difficult to do so when teaching a reproducible workflow. The solution suggested in this paper is to work on student motivation.

5. "Tools and Recommendations for Reproducible Teaching," by Mine Dogucu and Mine Çetinkaya-Rundel, shares the premise that if our teaching materials (raw data, lecture slides, videos, exercises, etc.) are clearly organized, workflow and links between various management systems are easy to follow and

all materials are available via a version control system and built-in Markdown notebooks. They give an example for how students can document and share their work, as well as professionally report it.

6. "Third Time's a Charm: A Tripartite Approach for Teaching Project Organization to Students," by Christina Mehta and Renee' Moore, reflects on three interactions of a statistical course and how students are guided to collaborate. The foundation of successful collaboration is transparently and neatly organized data documentation—a transferable skill pointed to by many contributions in this issue.

7. "LUSTRE: An Online Data Management and Student Project Resource," by John Towse, Rob Davies, Ellie Ball, Rebecca James, Ben Gooding, and Matthew Ivory, describes a system to engage students with best practices for open research by allowing them to experience different phases of reproducible research. They describe the LUSTRE package, which promotes good data management practices, enables the delivery of key concepts in open research, and organizes and showcases project work.

8. "Teaching for Large-Scale Reproducibility Verification," by Lars Vilhuber, Hyuk Harry Son, Meredith Welch, David N. Wasser, and Michael Darisse, describes an innovative pedagogical, research-led approach in which students are involved in the editorial work of the journals published by the American Economic Association. Students check completeness of replication materials and computational reproducibility of the code. They also have a chance to work across many coding languages to understand the workflow.

9. "Collaborative Writing Workflows in the Data-Driven Classroom: A Conversation Starter," by Sara Stoudt, reviews the use of reproducible tools (such as R Markdown and computational notebooks) to allow individual students to create reproducible research outputs, while noting that collaborative approaches are less often used. This is in stark contrast to how data science projects are done in real life. Stoudt discusses two workflow strategies that can be used in teaching reproducible research to students and that require students to delegate tasks (e.g., chunks of code), communicate to discuss changes, and integrate data.

10. "A Journey from Wild to Textbook Data to Reproducibly Refresh the Wages Data from

the National Longitudinal Survey of Youth Database," by Dewi Amaliah, Dianne Cook, Emi Tanaka, Kate Hyde, and Nicholas Tierney, motivates the importance of preparing reproducible materials as a way to refresh teaching materials based on datasets that are often updated. This approach is attractive in part because it can serve as an example for reproducible standards expected in student work.

11. "Approachable Case Studies Support Learning and Reproducibility in Data Science: An Example from Evolutionary Biology," by Luna L. Sanchez Reyes and Emily Jane McTavish, explores the question of how we communicate open access materials and how they relate to the real world outside of narrow data science silos. They find that even if code and data are published online, language used in replication materials might be too complex to clearly understand. They identify barriers in accessibility of research workflows and discuss how to make them more available to a general audience. ∎

Meet Joseph DeCarolis, US Energy Information Administration Administrator

The US Senate confirmed Joseph DeCarolis, President Joe Biden's nominee for administrator of the US Energy Information Administration, on March 31. Prior to his current appointment, DeCarolis served as a professor in the department of civil, construction, and environmental engineering at North Carolina State University. His career and publications have centered on addressing energy and environmental challenges at the intersection of engineering, economics, and public policy, and his core research involves the development and application of energy system models to examine energy futures under uncertainty.

DeCarolis

What about this position appealed to you?

As an energy systems analyst, I've been a long-time consumer of Energy Information Administration products. I was therefore incredibly honored to have the opportunity to lead such an important agency. EIA's information underpins our collective understanding of the US energy system and is a crucial source of sound, unbiased data and analysis for decision-makers in both the public and private sectors.

EIA data is pretty ubiquitous. If you randomly pick a news item or research study focused on the US energy system, it very likely includes a reference to our data.

Describe the top 2–3 priorities you have for the Energy Information Administration.

First, EIA must strive to make its information more accessible and transparent. This includes making EIA models open source and integrating different data streams into real-time, online dashboards. Transparency and accessibility engender trust, foster understanding, and allow stakeholders to make better use of EIA products.

Second, EIA's modeling capability should be expanded to examine a wider range of future scenarios that include the full spectrum of available fuels and technologies. The models should be tested under a wider range of assumptions to better evaluate potential outcomes pertaining to cost, emissions, reliability, and security.

And third, during this dynamic period of energy transition, it's important that EIA provides data that delivers new insights into community-level energy usage, trends, and impacts.

What do you see as your biggest challenge(s) for EIA?

Global energy markets are in a period of high volatility and are simultaneously transitioning to low carbon energy sources. Stakeholders understandably have a number of important and relevant questions pertaining to these issues, and it has been a challenge to develop the complex data and analysis to keep pace in a period of relatively flat budgets.

For example, the Bipartisan Infrastructure Law sets forth several requirements for EIA that are in line with the priorities I noted above; however, the law does not provide funding to EIA.

Fortunately, we have an incredibly talented team of statistical and analytic professionals who are working hard to meet these challenges.

How can the statistical community help you?

The challenges of the energy transition present a number of areas in which the statistical community

can help EIA by providing methodological guidance on key statistical issues. As an example, we are currently exploring ways in our energy consumption program to use small area estimation to develop community-level estimates that help characterize energy consumption and price impacts at a more granular level. The ASA Committee on Energy Statistics provides a key venue for exchanging ideas, and our recent joint meeting in September was quite successful in this regard. I look forward to continuing this ongoing relationship.

I also believe the broader federal statistical community has tremendous expertise that can potentially be leveraged to help EIA effectively and efficiently address the energy transition—as we examine deep decarbonization pathways in our data and analysis, for example.

Prior to your tenure, what do you see as the biggest recent accomplishment of the agency?

Rather than identify a singular accomplishment, I would highlight the deep expertise we offer to government, industry, and the public on a regular basis. For example, we frequently respond to requests from US Department of Energy leadership, the White House, and Congress about a range of important energy issues to help inform the decision-making process. In addition, we produce daily *Today in Energy* articles that help educate decision-makers and the general public about topical energy issues. EIA's *Energy Explained* is another great resource that provides informative, easy-to-understand information about a wealth of energy topics and serves as an example of how we strive to meet the full spectrum of our customers' needs. ∎

Participation High for
StatFest 2022

Therri Usher and Brittney Bailey, StatFest Planning Committee Members

While many conferences across the country have returned to in-person meetings, the ASA's Committee on Minorities in Statistics held its 22nd annual—and third virtual—StatFest conference on September 17.

StatFest is traditionally a one-day annual event aimed at encouraging undergraduate students from BIPOC [Black, Indigenous, People of Color] communities to consider graduate studies and careers in statistics and data science. It usually takes place at different locations around the United States; however, this year's virtual StatFest was held over one afternoon using Gather Town, a virtual space designed to mimic human interactions that typically occur at in-person conferences.

Despite the virtual setting, approximately 75 people attended. StatFest welcomed not only undergraduate and graduate students, but also high-school and community college students. As with the past two virtual offerings, StatFest 2022 was able to welcome international participants, with attendees joining from India, Pakistan, Rwanda, and Ethiopia.

The program began with informal pre-conference networking and officially kicked off with a welcome and opening remarks from Donna LaLonde, ASA director of strategic initiatives and outreach. The afternoon continued with two panels focused on statistics and data science careers in industry, academia, government, and nonprofit sectors, during which panelists described their roles before answering questions about day-to-day life in their respective fields. Between the two panels, Emma Benn of the Icahn School of Medicine at Mount Sinai gave the keynote and shared her journey through her career and life while encouraging attendees to always live their truth.

In the second half of the program, attendees listened to a presentation about preparing for graduate school by Justine Herrera of Columbia University and Kelley Kidwell of the University of Michigan. Immediately after, student attendees participated in "The Graduate Student Experience," a student-only session where they engaged in candid conversations with panelists enrolled in master's and doctoral programs in statistics and data science. At the same time, professional attendees participated in a session titled, "Adapting to Our New World: Acquiring and Retaining Talent in the Great Resignation," facilitated by Adrian Coles of Bristol Myers Squibb.

The day ended with closing remarks followed by post-conference networking. During breaks and networking sessions, attendees were able to connect with more than 10 academic departments and institutions in the StatFest EXPO by visiting virtual booths in the Gather Town environment.

StatFest organizers received positive feedback regarding the utility of the conference. Based on post-event survey results, attendees appreciated the "engaging, informative, and accessible" experience StatFest provides and the opportunity to connect with others.

A continued bright spot of the virtual setting is that attendees did not have to procure travel funds to attend. In fact, student attendees received a free one-year membership to the ASA.

StatFest 2023 is scheduled to be held at the SAS Institute in Cary, North Carolina, and StatFest 2024 is scheduled to be held at Columbia University in New York City.

Learn more about StatFest 2022 at *https://community.amstat.org/cmis/events/statfest/statfest-2022.*

IMSI Programs Offer Pro Communication Opportunities

The Institute for Mathematical and Statistical Innovation is the newest National Science Foundation mathematical sciences institute. Its mission is to bring rigorous mathematics and statistics to bear on complex urgent problems of significant scientific and social importance and spur transformational change in the mathematical sciences and its community. There are three primary pillars to this mission: scientific activity; diversity and broadening participation in the mathematical sciences; and effective communication about mathematical science research to a variety of audiences.

Training researchers to be good communicators to broad audiences is underdeveloped in the math and statistics fields, which could be detrimental to furthering growth and diversity in these disciplines. The institute is addressing these issues by focusing on an interdisciplinary approach to communication intended to broaden audiences and increase interest in the mathematical and statistical sciences. Communication endeavors at the institute center in the following three programs:

- Communication bootcamps
- MathStatBites
- *Carry the Two* podcast

Communication Bootcamps

The Institute for Mathematical and Statistical Innovation offers virtual and in-person bootcamps aimed at helping early-career researchers develop their communications skills. "Storytelling & Narrative Structure" teaches how to leverage a narrative to write a compelling teaching statement or successful grant.

In "How to Write for a General Audience," attendees learn about transforming a scientific paper into an engaging press release for media outlets. They learn to evaluate what makes a scientific finding newsworthy and practice recognizing and replacing jargon to improve the readability of their own work.

In "Job Talks & Stage Presence," participants learn how to apply public speaking skills to their presentations.

These bootcamps build skill sets applicable to academic and nonacademic careers and enhance individuals' ability to realize their broader communication goals.

To register for a communication bootcamp, see *www.imsi.institute/communications-bootcamps.*

MathStatBites

MathStatBites (*mathstatbites.org*) is a bite site from the ScienceBites galaxy hosted and supported by the institute. It offers early-career researchers the opportunity to gain experience in writing accessible summaries of mathematical and statistical research for individuals who are not experts in those fields.

Writers create short blog posts based on newly published, peer-reviewed articles. Recent articles include discussions about *p*-values and *e*-values, how to use math to improve cancer imaging, and using reinforcement learning to route rideshare drivers.

MathStatBites also strives to include undergraduate students who are interested in learning more about statistical and mathematical research. Undergraduates work with deputy editor Sara Stoudt to edit blog posts and provide feedback.

To become a MathStatBites contributor or learn more about communications at the institute, contact Sadie Witkowski, director of communications and engagement, at *sadiewit@imsi.institute.*

Carry the Two Podcast

In June, the institute launched *Carry the Two,* a podcast that pulls back the curtain on the mathematical and statistical gears turning the world. Part of the University of Chicago Podcast Network, *Carry the Two* is curiosity-driven and looks for unique perspectives from the mathematics and statistics fields.

Co-hosts Witkowski and Ian Martin use stories to convey how mathematical research drives the world around us, with each episode tackling a different topic. During the first season, Witkowski and Martin discussed modeling interactions between drivers and autonomous vehicles; attributing extreme weather events to climate change; and using mathematical tools to review policy documents for diversity, equity, and inclusion. The fall mini season included the institute's statistician-in-residence, Tiffany Christian, discussing statistics research on climate and the environment.

Find a list of episodes at *www.imsi.institute/podcast.* Subscribe and listen using the podcast platform of your choice, including Apple Podcast and Spotify.

IMSI is hosted by The University of Chicago and operated in partnership with the University of Illinois at Urbana-Champaign, the University of Illinois at Chicago, and Northwestern University. ■

Nicole Close
Biostatistician

> ## I found the more I put into the organization, the more I gained from it.

After completing my undergraduate degree in biology in 1992, I headed straight into a master's degree in epidemiology and biostatistics, which I finished in 1994. I needed to prepare for the world ahead of me, and while in the midst of my master's thesis, I started reading about the American Statistical Association's activities. The ASA seemed to have great information, a listing of potential jobs (which was vital at the time), and a number of educational activities. It was just the organization for me, given that I would be graduating soon and entering the unknown world of biostatistics.

I joined the ASA on November 1, 1993, and started my new job in 1994 as the only biostatistician at a small health-focused firm in Washington, DC. I felt alone yet needed by my colleagues, and I was still unsure of my unseasoned skills that hadn't yet been applied to real-world circumstances. Turning to the ASA as a support system was something I did but didn't appreciate until later in my career.

My involvement with the ASA grew through these early years, and the ASA was a foundation of support and growth for me. I found the more I put into the organization, the more I gained from it. I started off with educational activities and meetings. I became more involved as a committee chair in 2005 and 2008, a medical science and statistics presenter in 2008, and a successful statistical consulting presenter in 2011.

Both attendance at and active participation in ASA meetings, as well as educational activities, were key to my growth. The time I spent involved in these endeavors energized me and created new excitement within me for what I do. I met wonderful colleagues, who are still colleagues today, and I know if I have a question or need (like having someone serve on a data and safety monitoring board I am organizing), I can reach out to this network of professionals and friends.

Access to professionals, activities, and networking through the ASA allowed me to grow and prosper. Today, I own my own biostatistics consulting group and am teaching the next generation of biostatisticians.

Twenty-nine years after joining the ASA, I continue to look to the association for news, educational activities, and employment updates and opportunities. I may not be as active as I once was, but becoming a lifetime member allows me to give back. Today, I am the one mentoring and sharing knowledge and career advice with junior biostatisticians, helping them to grow.

My experience with the ASA has been a normal distribution: I started out in the left tail, became heavily involved in the ASA for 68.2 percent of my time, and am now heading into the right tail, where the ASA is still with me and supporting my needs. ■

Recognizing Academic Departments for JEDI Efforts . . . Continued

Biostatistics and statistics departments around the country have strived to embed justice, equity, diversity, and inclusion (JEDI) into their development and growth. *Amstat News* asked faculty and deans from both biostatistics and statistics departments to describe their work, along with their challenges and successes. To read about more academic departments making JEDI efforts, visit the November article at *https://bit.ly/3WDMLXg.*

University of California, Riverside

Esra Kurum, associate professor in the department of statistics at the University of California at Riverside, earned her PhD in statistics from the Pennsylvania State University. Her research includes analysis of survival and longitudinal data and semi- and nonparametric regression models.

Analisa Flores, assistant professor of teaching in the department of statistics at the University of California at Riverside, earned her PhD in applied statistics from the University of California at Riverside. Her research interests lie in statistics education for undergraduate students.

Yehua Li, professor and chair in the department of statistics at the University of California at Riverside, earned his PhD in statistics from Texas A&M University. He is a fellow of the American Statistical Association and Institute of Mathematical Statistics.

Describe your department's mission in implementing justice, equity, diversity, and inclusion. What steps have you taken to achieve this mission?

The department of statistics has a long tradition of supporting Hispanic and other underrepresented minority students from local Southern California communities. It has established many clubs and programs to provide professional development, networking, and outreach opportunities with the goal of increasing student involvement and improving their sense of belonging. Active student clubs include the Highlander Statistics Society for undergraduates, Statistics Graduate Student Association, and Mu Sigma Rho honor society for statistics.

The Highlander Statistics Society aims to foster a supportive environment in which students can learn and collaborate together. Club activities include coding workshops, social events, community service, and participation in the annual ASA DataFest competition hosted by the University of California at Los Angeles.

The Statistics Graduate Student Association aims to advance the academic, professional, and social lives of statistics graduate students by hosting social events and organizing student seminars.

Mu Sigma Rho memberships are awarded to both undergraduate and graduate students with academic distinction, accompanied by a free one-year ASA membership.

The Statistical Mentoring in Application, Research, and Technology Program was recently developed to provide statistics undergraduate students with the

opportunity to conduct research under the supervision of graduate students. It gives our undergraduates exposure to research and motivates them to pursue a graduate degree, while providing our graduate students with mentoring and leadership experiences.

Many faculty members are actively involved in supervising undergraduate capstone projects or participating in the college Summer Bridge to Research program and CAMP Scholar program. The latter is specifically designed to support underrepresented minority undergraduate student research.

In honor of the late professor D.V. Gokhale, the department established the Gokhale Lecture series in 2012. Each year, with support from the Gokhale Family Endowed Fund, the department brings to the University of California at Riverside campus a prominent speaker who presents a topic in statistics at an undergraduate level that will inspire our undergraduate students to conduct research.

In 2021, the department further established a DEI committee with members representing the faculty, staff, and undergraduate and graduate students. Our DEI committee embraces the unique and rich perspectives and experiences that arise from racial, ethnic, socioeconomic, sexual, and religious diversity within the department. The mission is to foster an inclusive and welcoming culture and atmosphere.

During its first year, the committee organized several DEI-centered activities, including a DEI social hour to foster a sense of togetherness and camaraderie and a DEI alumni panel discussion that provided an opportunity to hear from our underrepresented minority alumni who have built their careers in statistics. The DEI committee also hosted a workshop on the imposter phenomenon that focused on strategies to counter it and help others.

Finally, a DEI climate survey, analysis, and presentation was completed by our undergraduate students in an effort to better understand the DEI climate in the department. The committee will use the results of the survey to identify and guide future DEI activities.

What have been the biggest challenges in implementing justice, equity, diversity, and inclusion in your department?

The COVID-19 pandemic has created one of the biggest challenges of implementing JEDI in our department. Most of our efforts have been held in a remote format, which can make connecting and engaging in meaningful discussions difficult. Additionally, the extra responsibilities that faculty, staff, and students have taken on during the pandemic have limited the available time for people to participate in some of the scheduled activities. As we return to a more normal schedule this fall, we hope face-to-face meetings and training will garner larger attendance and involvement.

What can other departments learn from your JEDI work? Do you have a toolkit or resources you can share?

We have learned that representation is paramount. Our DEI committee is composed of members from each group in our department—faculty, staff, and undergraduate and graduate students. Through this structure, we are able to focus our efforts on the various ideas and diverse perspectives of those we are aiming to serve. Advocating for people to be heard, acknowledged, and valued is the strongest tool for successfully implementing our JEDI work.

Our department DEI committee website (*https://statistics.ucr.edu/diversity-equity-inclusion-0*) includes our mission, committee members, and recent activities. Also, our university's Office of Diversity, Equity, and Inclusion shares a wealth of resources through their website (*https://diversity.ucr.edu).*

What have been the benefits and results of your JEDI undertakings?

On a personal level, we have benefited by becoming more familiar with the types of support our students are seeking and resources available to help them. Through campus DEI training, we become more aware of the inequalities and biases and we better understand the importance of adding DEI statements to our syllabus, strategies for countering imposter phenomenon, and methods for encouraging community within our classrooms. All of these seemingly nuanced efforts make an impact on our students.

More generally, raising JEDI awareness among faculty, staff, and students is the biggest benefit thus far. Sending the message that our department embraces diversity and actively strives to combat inequalities is the first step to enacting changes.

Is there anything you would do differently if you could go back to the formation of your department?

Starting our JEDI efforts early on, including more student outreach to further diversify our student body and integrating all aspects of diversity as a crucial element in faculty hiring, would significantly increase the impact of our mission in implementing JEDI in the department.

If time and resources were not an issue, what one thing would you immediately do to bolster your JEDI efforts?

Our JEDI efforts could be bolstered by (1) requiring formal DEI training and workshops for all members of the department; (2) formally recognizing DEI efforts through awards and/or scholarships; (3) providing mentoring for underrepresented minority students; and (4) creating a space within the department to promote interaction and community building among faculty, staff, and students.

How does your university support your efforts?

Our university DEI office provides resources and training (imposter phenomenon, unconscious/implicit bias, how to write a diversity statement, etc.) to support JEDI efforts. Departments can arrange workshops through this office, using the various resources (syllabus samples, survey question bank, etc.) on their website.

Our college has also formed a DEI Advisory Committee that informs and provides feedback to the dean about JEDI efforts. The advisory committee consists of members from all departments, which allows for the exchange of ideas and discussion of department-level challenges that require higher-level support. Additionally, the college established a DEI scholarship, awarded to a graduate student in each department for excellence in DEI efforts.

Drexel University

Reneé H. Moore is a research professor and director of the Biostatistics Scientific Collaboration Center. She is also the director of DEI for her department and dedicated to recruiting, mentoring, and facilitating the retention of the next generation of diverse statistical scientists.

Leslie A. McClure is professor and chair of the department of epidemiology and biostatistics at Drexel University's Dornsife School of Public Health. She is passionate about increasing representation in statistics and has worked with several organizations dedicated to DEI efforts.

Describe your department's mission in implementing justice, equity, diversity, and inclusion. What steps have you taken to achieve this mission?

Our department is committed to combating racism as a public health threat, as well as creating policies and practices that are more equitable and inclusive and promote a more diverse and anti-racist culture with a collective consciousness rooted in dignity, equity, inclusion, and justice. These values reflect those of the Dornsife School of Public Health. Our approach incorporates the perspectives of students, staff, and faculty, and we hope to weave our desire to make real change throughout the fabric of all department endeavors, including research, teaching, service, and culture.

In addition, we join external organizations that also make it a priority to implement justice, equity, diversity, and inclusion in biostatistics, public health, and beyond. Members of our department have played key roles in activities such as the ENAR Fostering Diversity in Biostatistics Workshop, StatFest, JSM Diversity Mentoring Program, and Math Alliance.

Furthermore, we have successfully competed for and received funding from the Robert Wood Johnson Foundation's Transforming Academia for Equity Initiative that allows us to advance our school and department's anti-racism agenda.

We have additionally incorporated our anti-racist perspective into our educational programs, developing learning priorities that ensure all students in our department learn about the threats of racism in public health, regardless of their degree track or major. Specifically, for biostatistics, our students will complete assessments to "demonstrate (1) an awareness of structural racism as an underlying cause of health disparities and health inequities; (2) the ability to serve as culturally competent collaborators; and (3) an understanding of the historical connections between eugenics and statistics."

What have been the biggest challenges in implementing justice, equity, diversity, and inclusion in your department?

The biggest challenges in implementing JEDI are the time required to do it well and unpaid labor (both in terms of finance and reward in academic success). However, our school and department are working toward compensating labor through positions such as director of DEI for the department (part

of Reneé's overall percent effort) and naming and compensating a set of students each year as inclusion, diversity, equity, and anti-racism (IDEA) fellows.

In addition, JEDI work is recognized and collected each year in faculty annual reports, and annual reviews and promotion view JEDI efforts as important to both individual success and furthering our school and department missions. As our department mission indicates, we seek to create a culture that recognizes JEDI work is the responsibility of each member of the department.

What can other departments learn from your JEDI work? Do you have a toolkit or resources you can share?

We do not have a toolkit, but do have a draft action plan. If we had to share one lesson, it would be that JEDI efforts do not happen by accident. Our efforts in JEDI are intentional, and we are passionate about it, even if some aspects are unpaid or unrecognized.

Further, if we could share a second lesson, it's that advancements in JEDI will not happen if these activities are not valued. JEDI activities are valued in our department and school, where success as a student, staff member, and faculty member is broadly defined.

Last, we strive to recognize that different lived experiences bring different benefits to our community. In recruitment, retention, and recognition, we acknowledge the unique background, strengths, and contributions of each individual.

What have been the benefits and results of your JEDI undertakings?

We are proud to have a diverse community of faculty, staff, and students that is also reflected in our departmental and school leadership. This diverse community is seen and recognized both internally and by others in the statistics community, and many members of our community attribute it as a main reason why they decided to join our department.

Our JEDI undertakings have resulted in a community in which we feel welcome to openly speak and contribute, and these open dialogs have helped us to think more broadly, not just as a community but also in our science.

Our efforts to embrace JEDI principles and make them a central part of our community have helped create a strong department.

Is there anything you would do differently if you could go back to the formation of your department?

We are fortunate that our department was founded in a school for which health as a human right and health equity were framing principles. As a joint department of epidemiology and biostatistics, we have many social epidemiologists who have been examining health inequities from the start. This formed the foundation of our strength in JEDI, and we are lucky to be part of an effort that has been in place since the formation of our department.

Our social epidemiologists continue their JEDI research and, in biostatistics, we have faculty whose research focuses on the development and application of statistical methodology to investigate environmental and neighborhood determinants of health disparities.

If time and resources were not an issue, what one thing would you immediately do to bolster your JEDI efforts?

If time and resources were not an issue, we would immediately develop student programs, such as a summer program for undergraduates, a postbaccalaureate (bridge) program, year-round internships, and partnerships/programming with students and staff/faculty who often have fewer resources (e.g., K–12, historically Black colleges and universities, and Hispanic-serving institutions). In the future, we hope we can be successful in obtaining resources to implement some of these pipeline programs that can support our efforts to broaden participation in the statistical sciences.

How does your university support your efforts?

At a time when college was traditionally reserved for upper-class men, Drexel was founded in 1891 to make education—including hands-on training—accessible to all with no restrictions on religion, race, gender, or socioeconomic status. We are fortunate to be at a university that maintains this commitment of developing a culture of inclusion. There is much support for our JEDI efforts at both the university and the school levels. The efforts are from top down and bottom up.

To read about Drexel's culture of inclusion, visit *http://bit.ly/3UFhYaS*. ∎

STATISTICS, BIOSTATISTICS
Degree Growth CONTINUED IN 2021

Surge in Master's in Business Statistics Accentuates Demand for Data Science, Analytics Skills

Steve Pierson, ASA Director of Science Policy

The number of master's degrees in business statistics awarded annually increased from 37 in 2010 to nearly 3,000 in 2021, paralleling the growth in bachelor's and master's degrees in statistics and biostatistics over the last couple decades. Similarly, the number of universities awarding the business statistics degree increased from 4 to 55 in the same period, according to the latest preliminary data release for 2021 degree completions from the National Center for Education Statistics.

The NCES 2021 degree data also shows the growth in undergraduate and master's degrees in statistics and biostatistics over the last decades continues strong. For 2020 to 2021, bachelor's degrees grew 7 percent to 5,340 (49 of which are for biostatistics) and master's degrees grew 5 percent to 5,128 (917 for biostatistics), as seen in Figure 1. Doctoral degrees in statistics and biostatistics declined 6 percent to 689 (222 for biostatistics), consistent with the National Center for Science and Engineering Statistics finding that "the total number of doctorate recipients in the 2020–21 academic year declined by 5.4% from previous years."
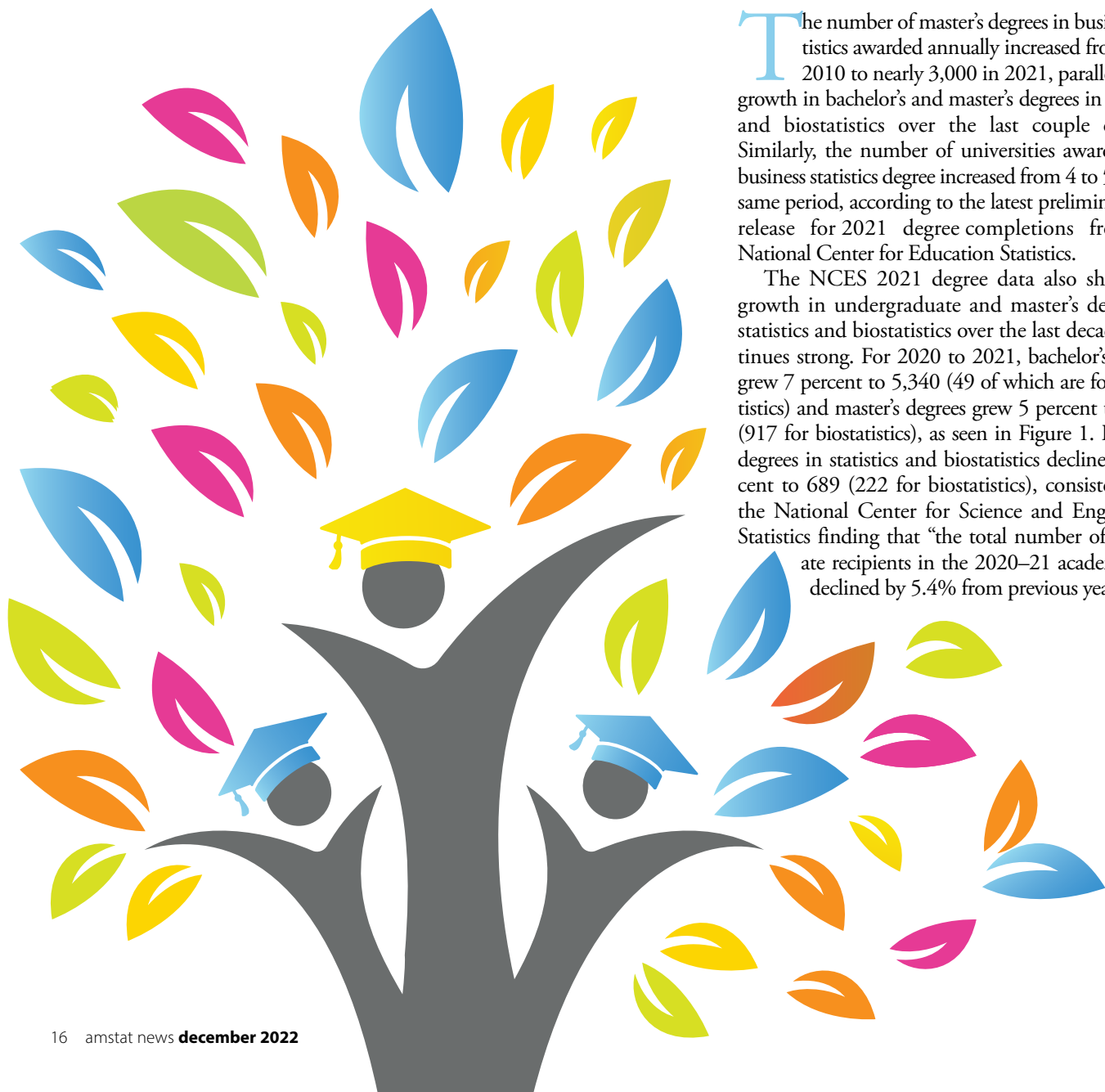
While the growth of bachelor's degrees is dominated by statistics—and the overall number of master's and doctoral degrees is two to five times greater for statistics than biostatistics—the percentage growth in graduate degrees for both fields has been roughly similar since 2010, as seen in Figures 2 and 3.

The orders-of-magnitude growth in master's degrees in business statistics is also seen by two other NCES Classification of Instructional Programs (CIP) codes used for master's programs in data science and analytics since before the introduction of a CIP code specific to data science in 2020. As shown in Figure 4, the number of master's degrees in data modeling/warehousing and database administration and in computational science has grown markedly over the last seven years.

The nascent data science CIP code, also shown in Figure 4, does not seem to have substantially affected the number of master's degrees reported in the other three categories since its introduction for the 2020 degree reporting. A possible mitigating factor is that the Department of Homeland Security did not include the data science CIP code in its STEM Designated Degree Program List until early 2022. The list is used by DHS to determine eligibility for the 24-month STEM optional practical training extension.

The number of universities using the CIP code for data science is still modest. For bachelor's degrees, the number increased from 13 in 2020 to 31 in 2021. For master's, it increased from 12 in 2020 to 17 in 2021. A list of such universities is available at *https://bit.ly/3UExB2c*. The number of bachelor's degrees awarded in data science was 84 in 2020 and 165 in 2021.

The increase in the number of universities granting statistics and biostatistics degrees also continues steadily, as seen in Figures 5 and 6. From 2020 to 2021, those granting bachelor's degrees in statistics increased from 159 to 176, master's degrees in statistics increased from 159 to 162, and doctoral degrees in statistics increased from 72 to 75. Master's degrees in biostatistics increased from 47 to 51, and doctoral degrees in biostatistics increased from 67 to 70. Eight universities granted biostatistics degrees at the bachelor's level in 2021.
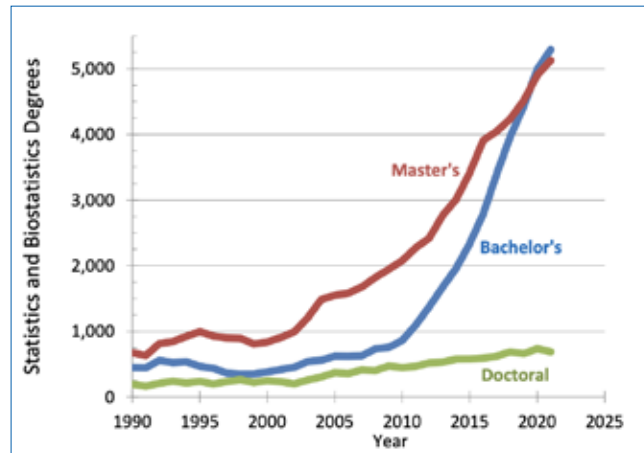

Figure 1: Statistics and biostatistics degrees at the bachelor's, master's, and doctoral levels in the United States for 1990–2021
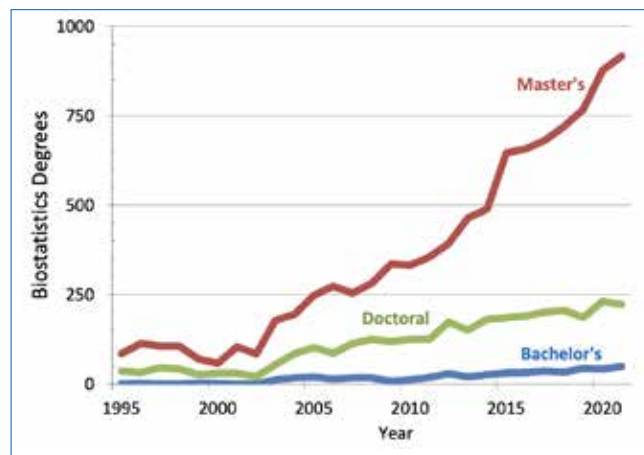Source: NCES IPEDS

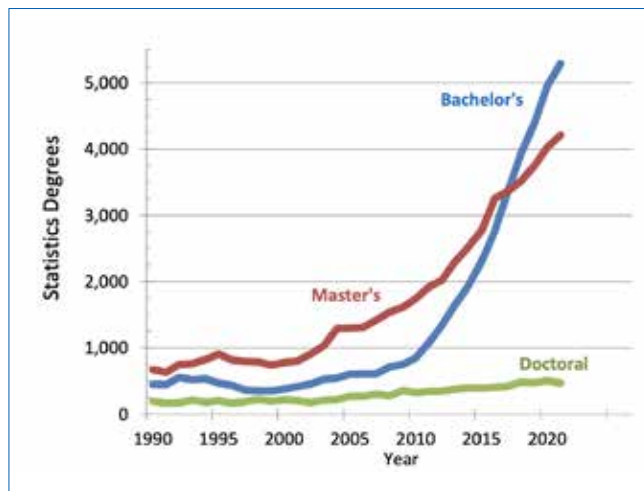**Figure 2:** Biostatistics degrees by degree level awarded in the United States

Figure 3: Statistics degrees by degree level awarded in the United States
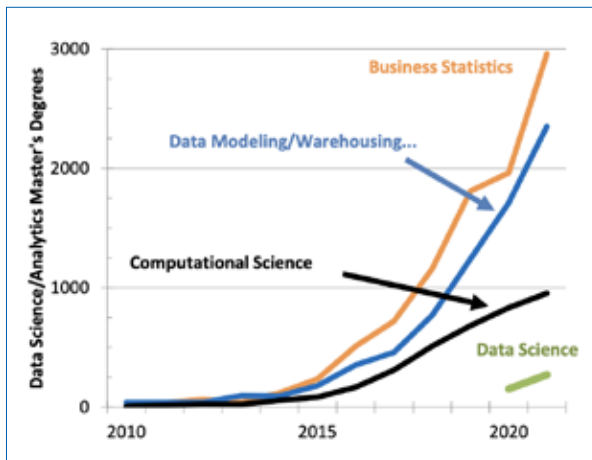
Figure 4: Master's degrees awarded from 2010 to 2021 for three Classification of Instructional Programs categories commonly used by new data science/analytics programs. The graph also shows the number of master's degrees awarded in 2020 and 2021 using the new classification code for data science.
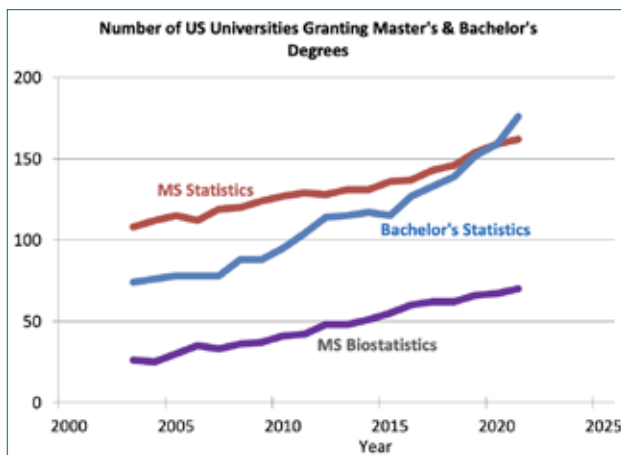

Figure 5: The number of universities granting statistics and biostatistics master's and bachelor's degrees
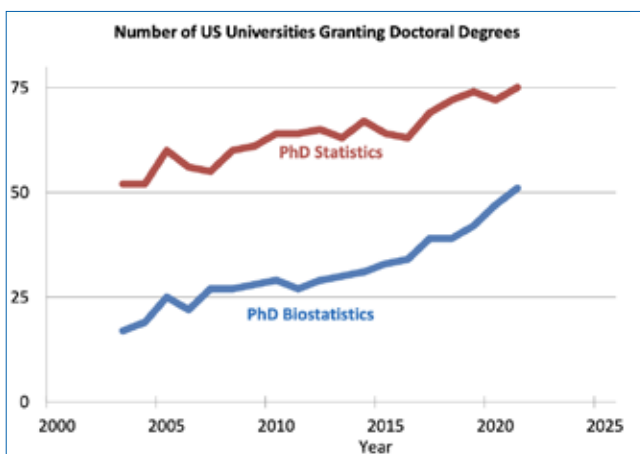Compiled from NCES IPEDS data

Figure 6: The number of universities granting statistics and biostatistics PhDs
Compiled from NCES IPEDS data

The following 31 universities granted statistics and biostatistics degrees for the first time (at least since 2003) in 2021:

- **Bachelor's degrees in statistics (14):** Bradley University, Brigham Young University-Idaho, Eastern Washington University, Edinboro University of Pennsylvania, Husson University, Lake Forest College, High Point University, Northern Illinois University, The Ohio State University-Main Campus, University of Missouri-Kansas City, Villanova University, Washington University in St Louis, Wayne State University, and William & Mary

- **Bachelor's degrees in biostatistics (1):** Indiana University-Purdue University-Indianapolis

- **Master's degrees in statistics (5):** Saint John Fisher College, University of Missouri-Kansas City, University of North Carolina at Greensboro, San Francisco State University, and Thomas Edison State University

- **Master's degrees in biostatistics (3):** University of Memphis, University of Nevada-Reno, University of Wisconsin-Milwaukee

- **PhD in statistics (3):** Harrisburg University of Science and Technology, New York University, and University of Nevada-Reno

- **PhD in biostatistics (5):** University of California-San Diego, Georgetown University, Saint Louis University, The University of Tennessee Health Science Center, and University of Delaware

The top degree-granting institutions over the last five years are in Tables 1–5 for all categories except biostatistics bachelor's degrees.

Demographics

Following our practice of alternating demographics updates, we look at the breakdown of degrees for race and ethnicity data and by nonresident aliens and US citizens or residents this year. Last year's update, which was based on 2020 degree data, had figures for the percentage of statistics and biostatistics degrees earned by gender. The degree data files with degrees by gender at *https://bit.ly/3UExB2c* have been updated with the 2021 data.

As shown in Figure 6, the percentage of master's and doctoral degrees in statistics awarded in recent years to nonresident aliens is near 60 percent and 70 percent, respectively. For the same degree levels in biostatistics, it is in the range of 50–55 percent. The percentage for bachelor's degrees
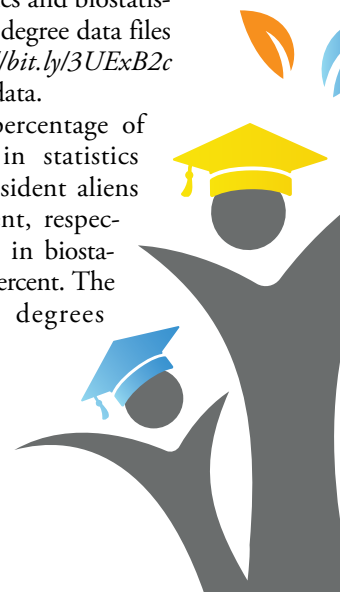
Tables 1–5—Top Five Universities Granting Statistics and Biostatistics Degrees for 2017–2021
* The University of Michigan master's in statistics number in 2021 includes 86 in applied statistics.

Statistics Bachelor's	2017	2018	2019	2020	2021	2017–2021	2003–2021
University of Illinois UC	179	229	315	335	396	1454	2060
UC Berkeley	215	226	224	233	148	1046	2284
Purdue University	199	197	176	195	198	965	1957
UC Davis	127	179	195	197	239	937	1439
UC Santa Barbara	121	145	158	211	261	896	1216
Subtotal	841	976	1068	1171	1242	5298	8956
Total	3459	4030	4536	5152	5532	17177	39448

Statistics Master's Degrees	2017	2018	2019	2020	2021	2017–2021	2003–2021
Columbia University	441	454	560	521	594	2570	5631
University of Chicago	99	155	139	181	220	794	1202
New York University	74	74	104	170	168	590	650
University of Michigan*	81	119	114	120	141	575	1159
Rutgers University	78	124	111	83	87	483	1355
Subtotal	773	926	1028	1075	1210	5012	9997
Total	3366	3515	3747	4025	4211	18864	44729

Biostatistics Master's Degrees	2017	2018	2019	2020	2021	2017–2021	2003–2021
Columbia University	52	84	99	124	115	474	864
University of Michigan	40	49	50	61	47	247	628
Emory University	36	30	46	59	47	218	387
Harvard University	42	28	43	25	37	175	377
Boston University	30	25	28	26	42	151	498
Georgetown University	33	25	33	30	30	151	267
Subtotal	233	241	299	325	318	1416	3021
Total	673	729	779	891	929	4001	9172

Statistics PhDs	2017	2018	2019	2020	2021	2017–2021	2003–2021
North Carolina State University	19	25	23	26	18	111	350
Iowa State University	18	27	19	18	12	94	258
University of Wisconsin	15	17	19	15	16	82	258
Florida State University	9	18	16	15	17	75	158
University of Michigan	13	9	14	18	12	66	184
Subtotal	74	96	91	92	75	428	1208
Total	419	482	474	505	467	2347	6833

Biostatistics PhDs	2017	2018	2019	2020	2021	2017–2021	2003–2021
University of North Carolina	14	17	12	19	17	79	253
Harvard University	14	16	19	9	17	75	226
U of Texas Health Science Center	13	19	12	15	14	73	174
University of Michigan	13	15	12	11	17	68	208
University of Washington	14	5	12	17	8	56	175
Subtotal	68	72	67	71	73	351	1036
Total	201	206	186	231	222	1046	2867

MORE ONLINE
These and related data—including the universities awarding master's degrees in business statistics—can be accessed at *https://bit.ly/3UExB2c*.
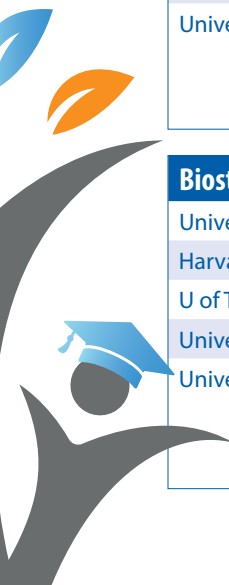
Table 6—Degrees Earned by NCES Race/Ethnicity Group and Degree Level, Averaged Over 2011–2021, as a Percentage of Degrees Earned by US Citizens or Residents
Source: NCES IPED

	AIAN	ASIA	BKAA	HISP	NHPI	WHIT	2MOR	UNKN
BA Stats	0.2%	26.6%	2.7%	7.5%	0.1%	55.9%	3.7%	3.3%
MS Biostats	0.1%	24.7%	4.6%	5.5%	0.1%	55.0%	2.9%	7.1%
MS Stats	0.1%	22.9%	4.2%	6.4%	0.1%	57.3%	2.4%	6.6%
PhD Biostats	0.0%	23.7%	4.8%	4.6%	0.7%	57.1%	1.4%	7.8%
PhD Stats	0.1%	18.0%	3.4%	3.9%	01.%	61.6%	2.6%	9.1%

Table 7—Number of Degrees Awarded to African Americans or Blacks Who Are US Citizens or Permanent Residents by Degree Level, Along with Percentage of Such Degrees to US Citizens or Residents

	BA Stats	MS Biostats	MS Stats	PhD Biostats	PhD Stats
2011	31 (3.3%)	12 (5.0%)	46 (5.3%)	6 (9.4%)	6 (3.8%)
2012	47 (4.5%)	14 (5.6%)	47 (5.0%)	7 (7.6%)	3 (2.4%)
2013	44 (3.5%)	15 (4.9%)	58 (5.6%)	3 (3.7%)	6 (4.4%)
2014	37 (2.7%)	11 (3.8%)	44 (4.1%)	5 (5.2%)	6 (4.0%)
2015	41 (2.5%)	18 (4.9%)	49 (4.2%)	4 (4.5%)	4 (3.0%)
2016	50 (2.6%)	18 (5.3%)	40 (3.2%)	3 (3.1%)	4 (2.6%)
2017	56 (2.4%)	16 (4.8%)	49 (3.8%)	6 (5.9%)	4 (2.5%)
2018	58 (2.1%)	14 (3.9%)	52 (3.9%)	5 (5.4%)	9 (5.0%)
2019	77 (2.5%)	23 (5.8%)	53 (3.7%)	2 (2.1%)	8 (4.7%)
2020	91 (2.7%)	16 (3.8%)	69 (4.2%)	2 (2.0%)	2 (1.3%)
2021	100 (2.8%)	12 (3.0%)	70 (4.0%)	6 (5.3%)	4 (2.9%)

Table 8—Degrees Awarded to Hispanics or Latinos Who Are US Citizens or Permanent Residents by Degree Level, Along with Percentage of Such Degrees to US Citizens or Residents

	BA Stats	MS Biostats	MS Stats	PhD Biostats	PhD Stats
2011	44 (4.7%)	7 (2.9%)	33 (3.8%)	3 (4.7%)	3 (1.9%)
2012	43 (4.1%)	19 (7.6%)	46 (4.9%)	1 (1.1%)	7 (5.6%)
2013	64 (5.2%)	12 (3.9%)	59 (5.7%)	3 (3.7%)	4 (3.0%)
2014	86 (6.2%)	14 (4.9%)	50 (4.7%)	2 (2.1%)	2 (1.3%)
2015	130 (8.0%)	18 (4.9%)	57 (4.9%)	5 (5.6%)	3 (2.3%)
2016	151 (8.0%)	22 (6.4%)	60 (4.9%)	2 (2.0%)	6 (3.9%)
2017	157 (6.8%)	17 (5.1%)	69 (5.3%)	7 (6.9%)	8 (5.0%)
2018	217 (7.9%)	21 (5.9%)	97 (7.3%)	5 (5.4%)	6 (3.4%)
2019	242 (7.8%)	27 (6.9%)	104 (7.3%)	4 (4.2%)	6 (3.5%)
2020	281 (8.5%)	27 (6.4%)	150 (9.2%)	4 (4.0%)	11 (7.4%)
2021	325 (9.1%)	20 (5.0%)	155 (8.8%)	11 (9.6%)	9 (6.6%)

Figure 7: Percentage of statistics and biostatistics degrees earned by nonresident aliens
Source: NCES IPED

in statistics ticked up a couple percentage points to 33 percent for 2020 and 2021 over the previous several years.

The NCES has race and ethnicity data for the degrees granted to US citizens or residents but not for nonresident aliens. Table 6 shows the race and ethnicity breakdown of the US citizens and residents averaged for 2011–2021. For the five degrees—not including biostatistics bachelor's, for which the numbers are small—the percentage of degrees earned by those who report their race as American Indian or Alaska Native (AIAN) is essentially 0 percent. For those identifying as Asian (ASIA), the percentage is in the range of 18–27 percent. It is 3–6 percent for those identifying as Black or African American (BKAA). The percentage for individuals of Native Hawaiian or Other Pacific Islander (NHPI) descent is 0–1 percent. The percentage for those individuals who identify as white (WHIT) is 55–62 percent and, for individuals who report two or more races (2MOR), it is 1–4 percent. For those identifying ethnicity as Hispanic or Latino (HISP), the percentage is 4–8 percent. Finally, the percentage for those reporting race/ethnicity as unknown (UNKN) is 3–9 percent.

To better understand the percentages in Table 6, consider Tables 7 and 8, which are time series for two under-represented minorities by degree level. For African Americans or Blacks who are US citizens or permanent residents, the number of doctoral degrees earned are in the single digits and seemingly a declining percentage of overall degrees awarded to US citizens or permanent residents. For the bachelor's level, there seems to be an increase in the number of degrees, but not an increase in the percentage of overall degrees earned by US citizens or permanent residents. See Figures 8 and 9.

For Hispanics or Latinos, the doctoral numbers are generally in the single digits with little or no movement over the decade. For bachelor's and master's in statistics, the numbers seem to be increasing and, as a percentage, also seemingly increased over 2011–2013, as shown in Figures 8 and 9 for bachelor's degrees.

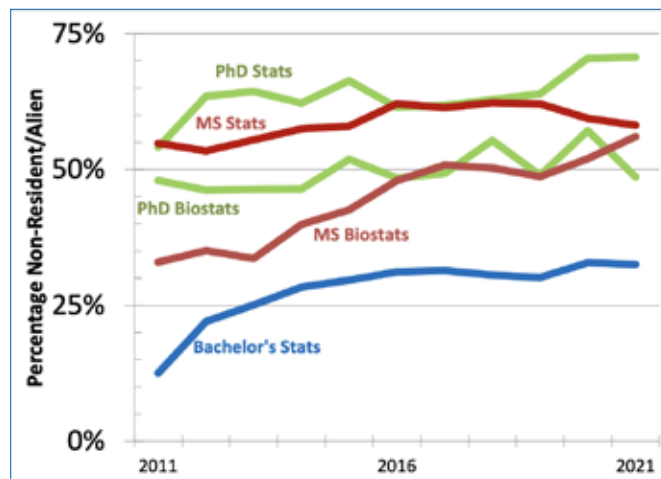Comments and questions may be sent to ASA Director of Science Policy Steve Pierson at *spierson@amstat.org.* ∎
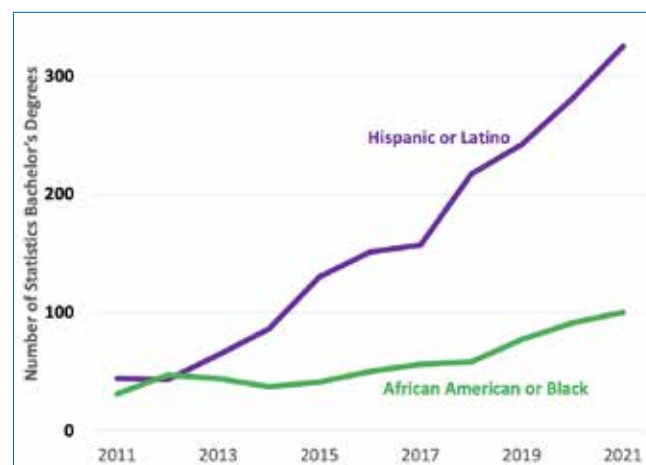

Figure 8: Number of statistics bachelor's degrees earned by African Americans/Blacks, Hispanics/Latinos who are US citizens or permanent residents
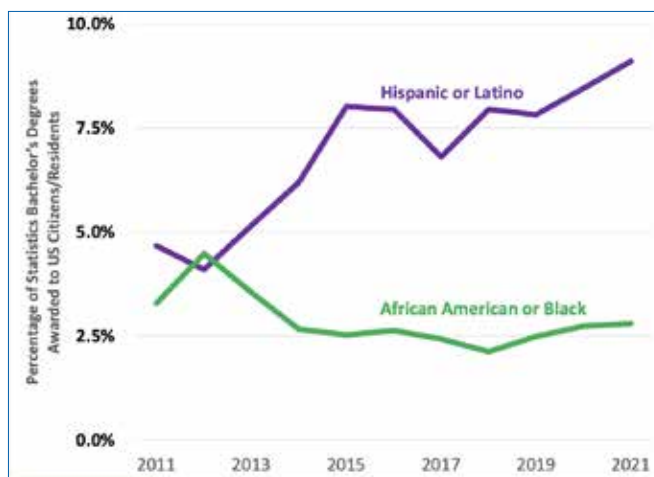Source: NCES IPED.

Figure 9: Percentage of statistics bachelor's degrees awarded to US citizens/residents who are African American/Black or Hispanic/Latino
Source: NCES IPED

Achieving Diversity in Labor Market Needs JEDI, Advocacy Groups

The Justice, Equity, Diversity, and Inclusion (JEDI) Outreach Group Corner is a regular component of Amstat News *in which statisticians write about and educate our community about JEDI-related matters. If you have an idea or article for the column, email the JEDI Corner manager at* jedicorner@datascijedi.org.

Joseph Gastwirth is a statistics and economics professor at The George Washington University and a fellow of the American Association for the Advancement of Science, American Statistical Association, and Institute of Mathematical Statistics. His book and articles have been used by the US Equal Employment Opportunity Commission and Office of Federal Contract Compliance Programs and cited in several legal opinions concerning discrimination.

The Civil Rights movement, which led to the desegregation of schools and the Civil Rights Acts of 1964 and 1972, helped improve the economic status of Blacks relative to whites from the 1950s to the early 1980s. According to "Black-White Earnings Over the 1970s and 1980s: Gender Differences in Trends" in *The Review of Economics and Statistics*, however, socioeconomic disparities have persisted due to, in part, legal, governmental, and societal practices that systematically deny resources and opportunities to racial minorities. It is noteworthy that plaintiffs win only 15–20 percent of equal employment cases in contrast with their 40–50 percent rate in other civil cases. This commentary suggests changes in the way courts have interpreted the equal employment laws since the mid-1980s likely contributed to sustained socioeconomic inequality.

Title VII is the part of the Civil Rights Act protecting individuals from employment discrimination on the basis of their race, ethnicity, gender, national origin, or religion. Plaintiffs can base their claim on one of two theories: disparate impact or disparate treatment. The *Griggs v. Duke Power* (1971) case concerned the appropriateness of a high-school education requirement when previously the company only required 10 years. Using census data from 1960, plaintiffs showed the proportion of Black males who had a high-school education was much less than the corresponding proportion of whites, a consequence of the myriad barriers Black children faced in segregated and underfunded schools. The court concluded the requirement had a disparate impact on Blacks. Then, the defendant needed to prove the requirement was

necessary for successful performance of the job, which it could not.

The disparate treatment approach requires the plaintiffs to prove they received less favorable treatment than an individual from the favored group. At the outset, the plaintiff needs to establish a *prima facie* case by showing they were qualified for the job but were rejected. Plaintiffs can support their claim with statistical evidence showing the hiring or promotion rates of individuals from their legally protected group were significantly less than those from favored groups with similar qualifications. In response, the defendant must articulate a legitimate nondiscriminatory reason for its action.

In *Texas Dept. of Community Affairs v. Burdine* (1981), the court noted that while the stated reason need not be the true one, it must be reasonably specific, as the plaintiff will need to use the evidence about the employer's practices obtained during pretrial discovery to show the offered reason is pretextual (i.e., a "cover" for discrimination). In contrast with disparate impact cases, where the defendant must prove the requirement is job-related, in disparate treatment cases, the employer only needs to produce a justification, as the burden of proof remains with the plaintiff.

The Civil Rights Act (1991) requires plaintiffs to show their protected status was a motivating factor in their adverse treatment. Then, the employer is given the opportunity to show a legitimate reason had greater influence on its decision, and the plaintiff will try to discredit that explanation.

For discrimination cases brought under other statutes, plaintiffs need to demonstrate their legally protected status was a "but for" cause of their

> **Individuals committed to advancing justice, equity, diversity, and inclusion in our schools and workplaces should … hold policymakers accountable for their inaction.**

negative treatment (i.e., that a similarly qualified member of the favored group would have received the position in question). These different standards of proof are described in the *Gross v. FBL Financial Services, Inc.* (2009), *University of Texas Southwestern Medical Center v. Nassar* (2013) and *Bostock v. Clayton County, Georgia* (2020) decisions.

Women face similar problems in winning compensation cases under the Equal Pay Act (EPA), which prohibits discrimination on the basis of sex. The use of regression analysis in this context is discussed by Mary Gray in her 1993 *Statistical Science* article, "Can Statistics Tell Us What We Do Not Want to Hear? The Case of Complex Salary Structures," and Michael Sinclair and Qing Pan's 2009 *Law, Probability, and Risk* article, "Using the Peters-Belson Method in Equal Employment Opportunity Personnel Evaluations." While the employer has the burden of proof in justifying a pay differential, plaintiffs are disadvantaged because even with strong statistical evidence, they need to compare themselves to an actual male employee with similar qualifications, not a hypothetical one.

In Equal Pay Act and disparate treatment cases, courts often reject comparators in different departments or having different supervisors, even when other job-related characteristics are similar. Furthermore, in addition to accepting justifications of pay differentials based on seniority, merit, or productivity, the law allows employers to use any factor other than sex. Some circuits require this factor to be job-related while others do not.

Even when plaintiffs prevail, the compensation they receive does not bring them to the level of the successful majority employees. Suppose a large firm hires 105 male and 105 female recent graduates. All majored in a job-related field and had similar job-related summer internships. At the end of their six-month probationary period, 100 males and 100 females are retained with similar favorable evaluations. Six months later, the employer promotes 40 males and 10 females. The females file suit relying on the 30 percent difference in promotion rates, which is highly significant (p-value $<10-5$). Because

of the very similar background qualifications, the employer cannot produce a legitimate explanation; the plaintiffs win and the court follows the shortfall method adopted by the relevant government agencies (US Equal Employment Opportunity Commission and Office of Federal Contract Compliance Programs). Women were half the eligible pool and should have received 25 (0.5*50) promotions. Therefore, they deserve the monetary equivalent of 25–10, or 15 positions.

Suppose females were awarded the promotions rather than money. There would be 25 females and 40 males at the higher level and females will form 38.5 percent (25/65) of the eligible pool for the next promotion. In a fair system, where women formed 50 percent of the qualified pool, they should form about 50 percent of those eligible for future promotion.

The conundrum is resolved by reviewing the underlying logic of the court's calculation. The expected number of promotions was based on the assumption that males and females have the same rates (null hypothesis). At trial, this assumption was contradicted by the data; therefore, subsequent calculations relying on it are erroneous. An appropriate calculation assumes the two promotion rates are equal, so 40 women should have been promoted. Thus, females deserve 40–10=30 additional positions; twice what the current system awards them.

Congress is unlikely to remove these impediments faced by individuals experiencing discrimination by allowing plaintiffs in all types of discrimination cases to demonstrate their protected status was a "substantial or motivating factor" in their adverse treatment, requiring explanations to be job-related, and broadening the range of potential comparators.

Individuals committed to advancing justice, equity, diversity, and inclusion in our schools and workplaces should raise awareness of these important issues, advocate for strengthening the educational system, improve access to health and housing, and hold policymakers accountable for their inaction. ∎

STATS4GOOD

Data for Good

2022 Year in Review

David Corliss is lead, Industrial Business Analytics, and manager, Data Science Center of Excellence, Stellantis. He serves on the steering committee for the Conference on Statistical Practice and is the founder of Peace-Work.

As 2022 draws to a close, it is a good time to look back at the important events in the Data for Good community and look ahead to new opportunities and challenges. The past year has seen the pace of change, new methods, and important results increase. JSM's theme, Statistics: A Foundation for Innovation, was never truer than this year.

In 2022, the far-reaching effects of the COVID-19 pandemic led to an emerging 'new normal' that has profoundly changed the face of science. On the whole, I would say scientific communities have become stronger as a result of the new tools and greater collaboration between groups, and even disciplines, in our increasingly global research community. Science is bigger, faster, and more diverse than ever before. As a result, collaboration may be the most important skill of all. More than ever, it is important to work in groups, confer with colleagues, and attend conferences

Seek to widen your circle of collaborators, including nonscientists. D4G increasingly pairs statisticians and data scientists with experts in other sciences, sociologists, economists, legal and policy advocates—even historians, who can provide insight into historical data sources and how today's problems developed over the years.

One focus here at Stats4Good in 2022 was some of the many ways the American Statistical Association supports work in Data for Good. This has included background on the mission and work of ASA sections, committees, and outreach groups.

Many have a direct connection to D4G, like the Committee on Ethics; Scientific and Public Affairs Advisory Committee; and Justice, Equity, Diversity, and Inclusion (JEDI) Outreach Group.

We also looked at some of the important partnerships the ASA maintains with other organizations, including the National Institute of Statistical Sciences and other statistical societies and organizations around the world. Each group brings valuable expertise and resources to support statistics and data science for the greater good to the table.

ASA conferences have brought together thousands of people working in so many areas. The Conference on Statistical Practice, Conference for Women in Statistics and Data Science, and others set the standard for how statistics addresses important issues of the day through keynote presentations, panels, and networking. JSM is one of the largest D4G events each year, with far too many presentations and activities to list. It also features important events, like the presentation of the Karl E. Peace Award for Outstanding Statistical Contributions for the Betterment of Society. This year, the award went to Susan Ellenberg from the University of Pennsylvania for her ground-breaking work in data monitoring for clinical trials and vaccine safety and for being a leader in mentoring and developing future scientists.

Because of its journals, community, and presentations, membership in the American Statistical Association is the one of the most valuable resources we have in our continuing Data for Good work. Together, we accomplished so much in 2022, and the future is brilliant.

December 2022 marks the completion of five years for this column. Megan Murphy—the most helpful, encouraging, and patient of editors—and the whole team at *Amstat News* deserve our thanks for making Stats4Good possible. At the outset, we stated the goal of fostering, encouraging, and providing networking and resources for "statistical analysis dedicated to good causes that benefit our lives, our communities, and our world." This vision continues to be our guiding star today.

Getting Involved

In opportunities this month, the ASA's Transportation Statistics Interest Group has announced the 2023 Clifford Spiegelman student paper competition for research in transportation statistics. The possibilities for D4G are endless. Up to four papers will be selected for awards and recognized at JSM 2023 in Toronto. Submissions are due by December 15. Find the details at *https://bit. ly/3UK5Cy4*.

Also, the Bureau of Labor Statistics is accepting applications for two research fellowships, one on statistical, economic, or behavioral science research and the other on data science. Submissions are due January 9. For more information, visit *https://bit. ly/36NzdRL*.

I would also like to make a special announcement regarding my January 2023 column. In the past, my year in review has appeared in the January issue, but I moved it to December to make room for a new annual feature to appear in the January issue. This will be a list of the current top challenges in Data for Good. I hope the 2023 D4G challenge list will promote and inspire new research, collaborations, panel discussions, hackathons, and more addressing the most important topics in Data for Good today.

To you, dear reader, I give my deepest thanks for joining us on the journey of seeking the greater good through the science of data and statistics. As we go forward, let us work together to open new avenues of research and strengthen each other's work. Be inspired and be an inspiration in Data for Good!

See you in January! ∎

W Women in Statistics and Data Science
Participants Talk Issues, Celebrate Diverse Voices

Donna LaLonde, ASA Director of Strategic Initiatives and Outreach

I will share a secret with you. The Women in Statistics and Data Science conference is my favorite. I think the pictures in this photo essay will convince you of why this is true. Enjoy this recap of WSDS 2022 and be on the lookout for information about WSDS 2023. I have a feeling it will become your favorite, too!

MORE ONLINE To view more photos, visit the ASA's WSDS 2022 Flickr page at *https://bit.ly/3NVIb2T*.

All photos by Olivia Brown/ASA

We all have superpowers, and the "Diverse Voices" plenary panelists shared theirs. Panelists are (top row, from left) **Micaela Parker** of the Academic Data Science Alliance, **Rebecca Hubbard** of the University of Pennsylvania, (bottom row, from left) **Dong-Yun Kim** of the National Institutes for Health, and **Elizabeth Juarez-Colunga** of the University of Colorado, Denver.

Participants from government, industry, and academe came together at WSDS. **Eli Holmes** of NOAA Fisheries (left) presents about open science adoption within organizations. (Additionally, Holmes and colleague Emily Markowitz, also of NOAA Fisheries, taught one of the WSDS short courses.) **Emily Griffith** of the North Carolina State University Department of Statistics (right) presents her work with the Data Science Academy.

Share knowledge, build community, and grow influence are the WSDS goals. ASA President **Kathy Ensor** takes time to explain how her initiatives align with these goals.

"Let's Talk the Issues" was the title of the opening plenary panel and the theme for the Women in Statistics and Data Science conference. Panelists are (top, from left) **Nairanjana Dasgupta** of Washington State University and president-elect of the Committee on Women in Statistics, **Eunice Kim** of Microsoft and chair of the Caucus for Women in Statistics, **Motomi Mori** of St. Jude Children's Research Hospital and president of the Committee on Women in Statistics, **Jessica Kohlschmidt** of The Ohio State University and executive director of the Committee on Women in Statistics (bottom left), and **Emily Casleton** of the Los Alamos National Laboratory and Caucus for Women in Statistics member (bottom right).

Mixing knowledge and refreshments at the poster sessions is an important part of WSDS.

WSDS celebrates students and early-career professionals. **Xiaoxia Champon,** a graduate student in the department of statistics at North Carolina State University, presents her research on clustering categorical valued functional data with application to social media.

Building community is an important goal for WSDS, and this includes the opportunity to talk with ASA president **Kathy Ensor**.

Successful JSM 2023 Program Requires You

Hao Helen Zhang, JSM 2023 Program Chair

JSM 2023 will take place in Toronto, Ontario, Canada, August 5–10. The theme for JSM 2023 is *One Community: Informing Decisions and Driving Discovery,* which emphasizes the essential role of statistics—as a data-driven discipline—in advancing data science, science, and all aspects of our society.

As the largest gathering of statisticians and data scientists in North America, the JSM 2023 Program Committee put together more than 200 invited sessions on a broad range of topics in statistics and data science. The invited panels will cover innovations in teaching statistics and data science, career growth and leadership, visions of the future of data science, and academic/industry/government collaborations.

The topics of invited paper sessions are timely and diverse. There are many, but the following is a sampling:

- Machine learning
- Statistical computing
- Optimization
- Causal inference
- Precision medicine
- Clinical trial design
- Advanced statistical methods for modern complex data
- Electronic health records
- Mobile and digital health data
- Non-Euclidean and topo-geometric data
- Emerging statistical challenges in blockchains, climate extremes, fintech, and COVID

The program will also feature recent contributions from statisticians to key issues, including reproducibility in teaching and research; trustworthy machine learning; robust and differential privacy; and justice, equity, diversity, and inclusion (JEDI).

Speed Sessions

The speed session is becoming increasingly popular at JSM due to its versatility. It allows for an electronic poster (e-poster) presentation that can include video, animation, interactive statistical graphics, and dashboards. A speed session consists of 20 oral presentations of approximately four minutes, with a five-minute break after the first set of 10 talks. These short oral presentations will be followed by an e-poster session, which will last 45 minutes.

Only for the speed sessions will the regular 110-minute contributed poster sessions be divided into two sessions. There will be 45 minutes for a first group of 20 presenters, a 20-minute transition period, and then 45 minutes for the second group of 20 presenters. The program committee tries to cluster speed session posters by topic to attract a large and focused audience.

The following incentives will be offered to presenters who participate in speed sessions:

- Electronic poster boards, so there will be no additional costs or hassle associated with printing or transporting a poster
- Ability to present orally and through an electronic poster

When you submit your contributed abstract, simply select "Speed" as the subtype.

Poster Sessions

Poster sessions allow you to have face-to-face extended discussions with individuals or small groups interested in your topic. Particular advantages are direct feedback and the ability to display extensive graphical or tabular materials, possibly in addition to a handout.

Contributed Sessions

Nearly half of JSM sessions are contributed. Contributed paper sessions consist of seven papers with 15 minutes of presentation time for each, including the introduction of the speaker and questions. Contributed abstract submission closes February 1, 2023, and a decision about acceptance will be made on March 31, 2023.

Session Chairs

Each JSM session requires a chair. The responsibilities include contacting speakers with session information before JSM and introducing speakers and managing presentation time during the session. Chairing a session is a great way for researchers who are new to the profession to build a professional network and get involved with JSM (and one can mention this service on one's CV). Simply volunteer to the program committee members of your section or society.

To participate in the JSM 2023 program, submit an abstract and title at *ww2.amstat.org/meetings/jsm/2023/submissions.cfm* by February 1, 2023. As part of the submission process, you must also select a "sponsor," which is the choice of the ASA section/committee or JSM partner society most closely associated with the topic of your presentation.

I look forward to seeing all of you in Toronto. I hope you will enjoy the program and participate by presenting your work, attending talks, visiting poster sessions, chairing a session, and taking continuing education courses.

Finally, the success of JSM relies on your involvement and input to help create an exciting and strong program. I am glad to receive any feedback. Please contact me, Hao Helen Zhang, at *hzhang@math.arizona.edu.* ∎

2023 INTERNSHIPS

The following companies are looking for 2023 interns. If you are interested in bettering your programming techniques, data analysis skills, and software skills, apply for one of these opportunities.

If your organization would like to include an internship opportunity on our website, complete the form at *https://bit.ly/3sPaNRw*. Interested students will send a letter of inquiry and résumé directly to the contact and location you list.

Alexion/AstraZeneca Rare Disease

Boston, MA

Positions: Multiple

Type of Student: Graduate student in biostatistics or statistics

Deadline: December 15, 2022

A technical project offering the opportunity for exposure and learning and resulting in a tangible deliverable.

Internship program begins June 5, 2023, with a minimum duration of 12 weeks.

Visit: *www.Alexion.com*

Amgen

Thousand Oaks, CA; Remote

Positions: 2

Type of Student: Graduate

Deadline: February 2, 2023

This internship provides the opportunity to participate in executive and social networking events and community volunteer projects while earning competitive compensation. Relocation in the form of a transportation allowance will be provided. Learn more at *https://careers.amgen.com/students-graduates.*

Apply: *http://careers.amgen.com* Search the database by position title or requisition R-155721

Astellas Pharma

Northbrook, IL; Remote

Positions: 3+

Type of Student: PhD candidate in statistics or related discipline

Deadline: January 27, 2023

Full-time internships are available in the summer for 10–12 weeks.

Successful candidates will work closely with a senior-level statistician on the design and analysis of clinical trials and statistical research topics.

Applicants must have completed at least two years of graduate-level coursework and be working on a dissertation toward a PhD in statistics or biostatistics. The applicant must be legally authorized to work in the United States. In addition, applicants should have a good working knowledge of R, S-Plus, or SAS and good communication skills.

Apply: Send CV, personal statement of interest, and a letter of recommendation to *Biostat.Intern@Astellas.com.*

AstraZeneca

Gaithersburg, MD; Durham, NC; Waltham, MA

Positions: Multiple

Type of Student: PhD (preferred) or MS candidates in statistics or biostatistics

Deadline: February 28, 2023

AstraZeneca will have multiple full-time summer biostatistics internships lasting approximately 10–12 weeks (May/June to August/September; dates flexible). As a biostatistics intern, you will work closely with an experienced statistician on one statistical topic from clinical trials. Potential topics include statistical work in early and late drug development with applications to oncology, rare disease, cardiovascular, and respiratory disease areas.

At the end of the internship, you will present your work within AZ Biometrics. Candidates must have a good knowledge of R and/or SAS.

The intern program is only for US college/university students who do not require sponsorship. Interns must be 18 years or older.

Apply: *https://bit.ly/3DPaUTh* (select "apply now")

Contact: Valerie Volpe at *valerie.volpe@astrazeneca.com*

Auburn University

Auburn, AL

Positions: 4

Type of Student: Graduate

Deadline: January 9, 2023

This is an interdisciplinary program in which candidates accepted into Auburn's graduate program from an array of schools and departments, can apply. Funded trainees receive a $34,000 stipend per year for up to two years, qualify for the Auburn graduate out-of-state tuition and instate tuition waivers, and have a set amount of semester student fees paid.

Funded trainees must either be a US citizen or permanent resident. MS and PhD students will conduct research within an integrated and multidisciplinary framework with the aim to better understand, predict, and communicate the resilience of natural, social, and built environmental systems.

Candidates need to be accepted to the Auburn University graduate program before participating in the NRT program. To learn more, check out *http://aub.ie/AUNRT.*

Contact: Kathryn Brown

Apply: *https://auburn.qualtrics.com/jfe/form/SV_40iLPHATAtO2lZc*

MORE ONLINE
Find full descriptions for these internships on STAT*tr@k* at *https://stattrak.amstat.org.*

Bristol Myers Squibb

New Jersey

Positions: Multiple

Type of Student: MS/PhD in statistics or data sciences

Deadline: January 31, 2023

- At least two years of course work and working on your thesis or dissertation toward a master's or doctorate in statistics, biostatistics, or data sciences
- Effective oral and written communication skills and good working knowledge of SAS and/or R and/or Python
- Authorization to work in the US or corresponding region
- Unemployed at the time the internship starts

Apply

Biostatistics: *https://bit.ly/3zxQax8*

Data Science, Statistical Programming (Grad): *https://bit.ly/3Wp75Ma*

Statistical Programming (Undergrad): *https://bit.ly/3DsJBgo*

Contact: *GBDS.Interns@BMS.com*

Daiichi Sankyo

Basking Ridge, NJ; Remote

Positions: Multiple

Type of Student: PhD (preferred) or MS candidates in statistics or biostatistics

Deadline: February 15, 2023

We are looking for full-time statistics summer interns to join our organization for 10–12 weeks. You will work closely with senior-level biostatisticians on innovative statistical methodology and/or application topics related to the design and analysis of oncology clinical trials. At the end of the internship, you will be expected to present your work within Global Statistical Seminars. The ideal candidate will have a good knowledge of R and/or SAS and completed at least two years of graduate-level courses.

Apply: *https://forms.office.com/r/wJ4w4TAift*

Contact: Philip He, *phe@dsi.com*

Eli Lilly and Company

Indianapolis, IN

Positions: Multiple

Type of Student: PhD

Deadline: January 15, 2023

The statistics, data, and analytics division of Eli Lilly and Company anticipates having several internship positions available for the summer of 2023. The internships start in either May or June and last 12 weeks.

Successful candidates will be assigned specific projects to work on under the guidance of a Lilly statistician.

Requirements

- Enrolled in a graduate-level curriculum leading to a PhD in statistics or biostatistics
- Completed at least three years of graduate work by May 2023

Additional Skills/Preferences

- Proficient in programming languages/software such as SAS, R, Spotfire, WinBUG, etc.
- Interpersonal communication skills for effective customer consultation
- Teamwork and leadership skills
- Technical expertise and application with working knowledge of experimental design and statistical analysis
- Self-management skills with a focus on results for timely and accurate completion of competing deliverables
- Creativity and innovation
- Demonstrated problem-solving ability and critical thinking

Apply: *https://bit.ly/3zxGwdJ*

Contact: *jhaley@lilly.com*

Eli Lilly and Company

Indianapolis, IN

Positions: Multiple

Type of Student: Master's

Deadline: January 15, 2023

Several internships are available for the summer of 2023. The internships start in either May or June and last 12 weeks.

Requirement

- Candidates are enrolled in a graduate-level curriculum leading to a master's degree in statistics or biostatistics.

Additional Skills/Preferences

- Proficient in programming languages/software such as SAS, R, Spotfire, Python, etc.
- Interpersonal communication skills for effective customer consultation
- Teamwork and leadership skills
- Technical expertise and application with working knowledge of experimental design and statistical analysis
- Self-management skills with a focus on results for timely and accurate completion of competing deliverables
- Resource management skills
- Creativity and innovation
- Demonstrated problem-solving and critical thinking ability
- Business process expertise associated with critical activities (e.g., regulatory submissions)

Apply: *https://bit.ly/3FzBfWl*

Contact: *jhaley@lilly.com*

Genentech

South San Francisco, CA

Positions: 14

Type of Student: Master's or PhD (with at least one year of graduate work by May 2023) majoring in statistics, biostatistics, computer science, data science, mathematics, biotechnology, or related field

Deadline: January 27, 2023

This is an intensive 12-week, full-time (40 hours per week, standard business hours) paid internship. Program start dates are in May and June 2023.

Apply: *https://go.gene.com/DSS2023SummerInternships*

Gilead Sciences

Foster City, CA

Positions: 3

Type of Student: PhD candidate in biostatistics, or related discipline

Deadline: January 31, 2023

As a Gilead intern, you will contribute to meaningful projects that will advance our company's mission and allow you to gain real-world experience. You will also have opportunities to participate in special events.

Interns will work closely with an experienced biostatistician on topics related to the design and analysis of clinical trials, analysis of biomarker data, or statistical methodology.

Requirements

- Pursuing a graduate degree in statistics/biostatistics (preferred) or related scientific field
- Authorized to work in the United States without sponsorship now or in the future

Apply: All candidates should apply on the Gilead Career site at *www.gilead.com/careers/careers-at-gilead.* Search for "Intern – Biostatistics."

GSK

Collegeville, PA; Remote

Positions: 2

Type of Student: PhD

Deadline: March 15, 2023

We are seeking people with good technical and communication skills and the ability to learn rapidly, develop practical solutions, and apply statistical techniques in creative ways for 10–12-week, full-time summer internships.

Candidates must be currently enrolled students seeking their PhD in statistics, biostatistics, or a related field and must have completed two years of graduate study (i.e., coursework equivalent to an MA/MS in statistics).

Apply: Search for "Research Statistics" at *https://bit.ly/3fmUZCj.*

Contact: *valeriia.x.sherina@gsk.com*

Johnson & Johnson

Spring House, PA; Titusville, NJ; Raritan, NJ; La Jolla, CA

Positions: 10

Type of Student: Master's or PhD

Deadline: February 15, 2023

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.

Candidates must be enrolled in an accredited college (not necessarily taking classes) and pursuing a PhD in biostatistics, statistics, data science, or a related discipline.

Students must be available for 10–12 weeks from May to August and have the ability to work full-time.

A minimum 3.0 GPA is preferred.

Remote work options may be available, with the expectation that J&J onsite internships will be permitted by public health governance in the summer of 2023.

Apply: *https://bit.ly/3fm3NZa*

Liberty Mutual Insurance

Boston, MA; Remote

Positions: 20–25

Type of Student: PhD or Master's

Deadline: January 6, 2023

Here's the perfect opportunity to grow your knowledge and skills in key areas such as cloud computing, machine learning, and modeling techniques and software.

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, human resources, 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: *https://bit.ly/3FQWy6D*

The Lubrizol Corporation

Wickliffe, OH

Positions: 4

Type of Student: Undergraduate, graduate, PhD

Deadline: February 10, 2023

The project work depends on the skills/interests of the intern and current needs of the department.

Apply: *https://bit.ly/3DNKaCS*

Contact: Allison Rajakumar, *allison.rajakumar@lubrizol.com*

Natera

San Carlos, CA; Austin, TX; US Remote

Positions: 4

Type of Student: Undergraduate, graduate, and PhD

Deadline: January 6, 2023

As an intern, you will work on solutions in bioinformatics, data science, or biostatistics. Potential projects include analytical tool development, design and analyses of research, validation, and clinical studies.

Apply: *www.natera.com/company/careers*

Novartis

East Hanover, NJ; Cambridge, MA; Fort Worth, TX; (*all with hybrid options*)

Positions: Multiple

MORE ONLINE
Find full descriptions for these internships on STAT*tr@k* at *https://stattrak.amstat.org.*

Type of Student: Graduate students in PhD program

Deadline: January 21, 2023

Multiple internship positions are available for approximately 12 weeks in 2023 (May to August; exact dates flexible).

Interns will work on quantitative projects under the guidance of experienced quantitative scientists

Qualifications

- Candidates must be enrolled in a graduate-level program working toward a PhD in biostatistics, statistics, pharmacometrics, computer science, engineering, or a related discipline and have completed at least 1.5 years of course work.

- Competitive candidates must have excellent oral and written communication skills and strong problem-solving skills.

- Working knowledge of R or SAS—as well as a strong background in NONMEM, Python, and/or other software/languages—is preferred.

Apply: Complete the application form at *https://bit.ly/3NmjDjb* and email a CV to *internships.analytics@novartis.com.*

Pfizer
La Jolla, CA; Boulder, CO; Groton, CT; Collegeville, PA; Cambridge, MA; New York, NY; Andover, MA; Pearl River, NY

Positions: Multiple

Type of Student: Graduate students in statistics, biostatistics, or related fields

Deadline: February 15, 2023

The internship will consist of up to 480 hours of work at one of the Pfizer sites, commencing as early as May and ending as late as September. The intern's project will be biomedically oriented, with one-on-one supervision. 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 the intern's efforts.

Applicants must have completed at least one year of graduate study by May 2023 and have work authorization in the US.

Apply: Submit your application via Handshake (Job #7118322 - 2023 Pfizer Statistics Internships). Visit *https://app.joinhandshake.com/jobs/7118322*. If you do not have a Handshake account, you will be prompted to create one.

Contact: *StatSummerIntern@pfizer.com*

Sanofi US
Bridgewater, NJ; Cambridge, MA

Positions: Multiple

Type of Student: PhD candidate in statistics or biostatistics

Deadline: April 2, 2023

Successful candidates will work on design and analysis of early- and late-phase clinical trials and statistical methodology research under the supervision of senior-level statisticians.

Candidates must have completed at least two years of graduate coursework and be working on a dissertation toward a PhD in statistics or biostatistics. Requirements include effective oral and written communication skills and knowledge of SAS and R. Python is a plus.

Apply: Email CV and (un)official graduate transcript to Xiaodong Luo at *xiaodong.luo@sanofi.com.*

Schonfeld
New York, NY

Positions: 1

Type of Student: Bachelor's, master's, or PhD in a quantitative or technical field such as statistics, mathematics, physics, electrical engineering, or computer science (ideally with one year left in academic program)

We are seeing an exceptional intern to join our quantitative research team, where they will work with other researchers and developers on various research projects.

Depending on the portfolio manager team the intern joins, they will be directly responsible for furthering our alpha research. Over the 10-week internship program, they will have the opportunity to collaborate with senior team members to learn what it takes to be a successful quantitative researcher. Additionally, they will have the opportunity to network and socialize with peers throughout the internship.

Apply: *https://bit.ly/3SOEqNm*

Schonfeld
New York, NY; Miami, FL

Positions: 1

Type of Student: Bachelor's, master's, or PhD degree in a quantitative or technical field such as statistics, mathematics, physics, electrical engineering, or computer science (ideally with one year left in academic program)

We are seeking a highly qualified risk analyst summer intern to join our risk team. The risk analyst summer intern will spend 10 weeks with the Schonfeld risk team, focusing on a quantitative risk research project related to some aspect of risk measurement and forecasting, liquidity measurement, or portfolio optimization and construction. The research project will be empirical in nature and involve the use of advanced quantitative techniques and market intuition.

Apply: *https://bit.ly/3SW6O0b*

Schonfeld

New York, NY

Positions: 1

Type of Student: Bachelor's, master's, or PhD in a quantitative or technical field such as statistics, mathematics, physics, electrical engineering, or computer science (ideally with one year left in academic program)

We are seeking a highly qualified risk data science summer intern to join our risk team. The risk data science summer intern will spend 10 weeks with the Schonfeld risk team, focusing on a data science research project related to the use of real-world data in the investment process. The intern will work alongside data scientists and engineers to ingest new data sources, develop a deep understanding of specific data sets, and use the data to better understand the companies and economies we invest in.

Apply: *https://bit.ly/3FDMtcS*

Soflytics Corp - Rguroo

Remote

Positions: 2

Type of Student: Undergraduate or graduate student in statistics or related field

Deadline: February 28, 2023

Rguroo is the flagship product of Soflytics Corp, specially developed for teaching statistics. We seek students interested in statistics education with good technical writing and communication skills.

A successful candidate will have the knowledge of (or would be willing to learn) R-Markdown and the statistical software Rguroo. Knowledge of R is a plus.

Qualifications

- Currently enrolled as a student at an accredited college/university
- Available for at least five hours per week

- A minimum GPA of 3.0 is preferred
- Self-management skills

Apply: *https://rguroo.com*

StataCorp

College Station, TX

Positions: 1–3

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

Deadline: February 28, 2023

Job duties 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.

Requirements

- Must have completed at least three years of graduate course work
- Good statistical, technical writing, and communication skills
- Experience programming in Stata, C/C++, Java, or other statistical and programming languages
- Research experience in Bayesian analysis, missing-data methods, multilevel modeling, nonparametric statistics, clinical trials, survival analysis, causal inference, time-series analysis, or panel-data analysis is desirable.

Apply: *www.stata.com/internships*

Susquehanna International Group

Bala Cynwyd, PA

Positions: 10

Type of Student: Graduate, PhD, postdoc

Deadline: April 1, 2023

During the 10-week summer internship, you will gain exposure to real projects in proprietary trading as you collaborate with a quantitative research mentor.

Qualifications

- Students in their fourth or fifth year of their PhD program (or master's students graduating in 2024) studying in a quantitative field such as mathematics, physics, statistics, electrical engineering, computer science, operations research, or economics
- Exceptional mathematical problem-solving skills
- Solid communication skills, both in the ability to understand others and to make yourself clearly understood
- Strong, practical computing skills; a specific language proficiency is less important than your ability to get computers to accomplish tasks efficiently and reliably
- Experience working on in-depth research projects

Apply: *https://bit.ly/3U0ztCv*

Thomas Jefferson University Division of Biostatistics

Philadelphia, PA

Positions: 3

Type of Student: Undergraduate (junior or senior preferred), master's

Deadline: February 15, 2023

Jefferson's Division of Biostatistics 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. Interns will be paid a stipend.

Applicants may be current students or recent graduates and should have interest in pursuing a career in (bio)statistics, data science, or similar quantitative field with a focus on the biomedical sciences.

Apply: *https://bit.ly/3U23cv2*

Contact: Constantine Daskalakis at *constantine.daskalakis@jefferson.edu*

Website: *https://bit.ly/3sJKz2V*

Travelers

Hartford, CT; St. Paul, MN; Remote

Positions: 35

Type of Student: Graduate

Deadline: March 31, 2023

As an intern, you will be exposed to a challenging professional work experience in data science. You will assist in designing, developing, and programming methods, processes, and systems to consolidate and analyze unstructured and structured, diverse data sources and generate actionable insights and solutions for client services and product enhancement.

The internship offers a training curriculum focused on data science and business acumen. Other program components include formal mentoring, networking, and career guidance.

Travelers offers a hybrid work location model designed to support flexibility. Some positions may be 100 percent remote and include a combination of mobile work and/or work from your primary residence.

Intern duties will vary based on the specific assignment.

Apply: *https://careers.travelers.com* (search for DSLDP)

University of Texas Medical Branch Summer Institute in Biostatistics and Data Science

Galveston, TX

Positions: 20

Type of Student: Current undergraduate student majoring in mathematics, statistics, biology, or other science who has an interest in quantitative methods. US citizenship or permanent resident status is required.

Deadline: March 31, 2023

This is a seven-week program (June 12 to July 28, 2023) is designed to expose undergraduate students to the opportunities offered by a career in biostatistics/data science and encourage them to pursue graduate study in those fields. Students will earn college credit for a course in biostatistics, learn statistical software packages, attend seminars on biostatistical topics and research, participate in professional development workshops, and take part in a collaborative research project with other students mentored by faculty members. At the annual symposium, students will prepare and deliver a polished poster presentation that reports on their research.

Travel to Galveston and a living stipend (including lodging and meals) are provided.

Apply: *https://redcap.utmb.edu/surveys/?s=HTCDJPYRAK*

Contact: Heidi Spratt at *hespratt@utmb.edu*

Website: *https://bit.ly/3WieJaW*

US Food and Drug Administration, Center for Drug Evaluation and Research, Office of Biostatistics

Silver Spring, Maryland

Positions: Multiple

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

Deadline: March 1, 2023

Multiple internship positions available for advanced PhD graduate students in statistics or biostatistics starting in May 2023 and ending by September 1, 2023.

Interns will engage in research projects on topics relevant to OB scientific needs.

Interns are expected to participate in the internship 40 hours per week at our headquarters in Silver Spring, Maryland, with their mentor and cohort. Participants may conduct offsite training on a temporary basis while the mentor and FDA staff are working offsite.

Interns will prepare a written report and 30-minute presentation summarizing the work.

Successful candidates must be legally eligible to work in the US.

US citizenship is not required for participation. Due to requirements for issuance of an official FDA identification card, individuals selected for participation must be able to successfully pass a tier 1 background investigation for the federal government.

Requirements

• Solid statistical background

• Strong problem-solving skills

• Strong computational skills

• Experience with SAS and/or R

• Proficiency with MS Office

• Excellent oral and written communication skills

• Interpersonal and teamwork skills

• Self-management skills

• Demonstrated creativity and innovation

Apply: Send CV and cover letter to *CDER-OTS-OB-Recruitment@fda.hhs.gov* with APPLICATION ORISE 2023 in the subject line. Questions? Use QUESTION ORISE 2023 as the subject. ∎

Author Uses **INFOGRAPHICS** to Introduce Stats to Children
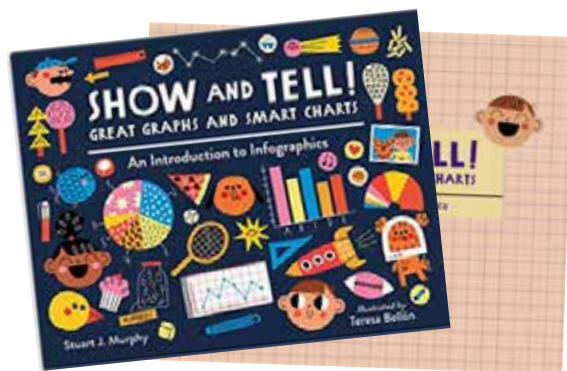
Pat Hopfensperger—retired statistics teacher, author, and former chair of the ASA/National Council of Teachers of Mathematics Joint Committee on K–12 Education in Statistics and Probability—recently interviewed Stuart J. Murphy about *Show and Tell! Great Graphs and Smart Charts: An Introduction to Infographics,* his new book for children in grades K–4.

Murphy is a visual learning strategist and children's book author. In addition to his new book, he is the author of the award-winning MathStart series, which includes 63 children's books that present mathematical concepts in the context of stories for students in pre-K through fourth grade.

He is also the author of Stuart J. Murphy's I SEE I LEARN—a 16-book series for children in pre-K, kindergarten, and first grade with stories that focus on social, emotional, health and safety, and cognitive skills.

Murphy is a member of the authorship team of several programs published by Savvas Learning, including enVisionMATH, a comprehensive elementary school series, and Three Cheers for Pre-K, a school readiness curriculum.

A graduate and trustee emeritus of the Rhode Island School of Design, Murphy has been a participant of and speaker for programs at the Reggio Emilia International Study Center, Harvard Graduate School of Education, National Association for the Education of Young Children, and Bologna International Children's Book Fair. He has also been a frequent presenter at meetings of the National Council of Teachers of Mathematics and other professional organizations.

Most of all, Murphy is an advocate for using visual learning strategies to help students succeed in school and life.

Hopfensperger's grandchildren—Lucy (10) and Charlie (8)—can vouch for Murphy. They recently read *Show and Tell!* and said they liked the examples. Lucy liked the example about pets, and Charlie's favorite was the burp graph. He laughed when he read, "Grandma – 50 burps!"

Read on as Hopfensperger digs deeper into Murphy's motivations for teaching children about data and statistics.

Tell us a little about your background and your interest in mathematics and statistics.

I am a graduate of the Rhode Island School of Design. While art school may not seem like a likely starting point for an interest in mathematics and statistics, my early career soon led to a design position in educational publishing. That caused me to consider things like how visual images can engage children and how they acquire knowledge from visual representations such as charts and graphs. From that point on, my career has been focused on how to use visual learning techniques to help young children become more successful students. *Show and Tell!* is my 80th book.

After writing so many books about math, why did you decide that creating a children's book on the topic of infographics was important?

As the world in which they live becomes increasingly more complex, I think young children need to know about data and statistics. Not the data of Wall Street or the statistics of the world, but information about their own lives and the things that interest them. Displays of data can become part of their language, part of how they can better understand things and communicate with others. When presented in creative infographics, these displays bring that information to life.

Do you think young children can easily grasp this notion of understanding and communicating data in a visual format?
Absolutely! Young children can easily create and interpret pictographs that use blocks or coins or buttons to represent quantities. They readily understand that the column with the most objects represents the largest quantity and can quickly identify what comes second and third. Similarly, simple bar graphs are easily understood and interpreted by very young children when making comparisons.

While pie charts and line graphs can be more complex, it isn't long before children grasp which wedge of the entire circle is the biggest and therefore represents the most and which wedge is the smallest and represents the least. The same is true with the ups and downs of a line graph showing change over time. ("It's hotter when the line is higher and cooler when it's lower." "The line went up when we were going faster. It came down when we were going slower.")

Also, children love to take polls, such as how many children in their class are wearing red, blue, or neither. Favorite colors. Favorite foods. When they take the polls themselves, they know the data is real. It's about them. This engages them and helps them make sense of the charts and graphs they create.

What are some of the benefits for children of learning about charts and graphs?
One of the greatest benefits is that charts and graphs allow children to understand something complex quickly and easily. Just think how much easier it is to grasp the meaning of a set of statistics from a graph than from a column of figures. Another is children see mathematics applied to real-life situations. No more, "When am I ever going to use that?"

Of course, there is the benefit of building foundational skills for things they will encounter later in life as they see charts and graphs used to present financial data, predict trends, and play a role in their decision-making processes. There is also a social benefit to creating charts and graphs as polls are taken among friends, family members, and others and the results are shared, interpreted, and enjoyed.

Can you talk a little bit about the four types of graphs covered in the book?
I decided to include simple versions of the four basic graph types: pictographs; bar graphs; pie charts or circle graphs; and line graphs. I wanted to demonstrate how these are the same and how they are different from one another—and how they can serve different purposes. I thought this would provide an easy entry for young students and help them to eventually be able to determine what type of graph might best communicate the data they have collected and the point they want to make.

My overall purpose was to help children learn what data is and how to collect and organize it, build appropriate graphs, and create engaging infographics. I also wanted to show the give and take—communicating the data they have collected (the give) and interpreting data others have shared (the take).

Do all graphs have similar parts? Most bar graphs and line graphs include an x-axis across the bottom and a y-axis up the side. The x-axis often shows the categories being compared in the case of a bar graph or intervals of time on a line graph. The y-axis can show evenly spaced intervals of quantities, periods of time, or whatever other variable is being presented. This changes for circle graphs, which show segments of a whole, and pictographs, which represent quantities with symbols. For all charts and graphs, an engaging title will help explain the purpose of the graph and draw people into the information provided.

How do you anticipate this book will be used by both parents and teachers?
Teachers should find great value in using *Show and Tell!* to reinforce classroom work on data collection and statistics. I believe teachers, librarians, and others involved in the education of young children will find they can prepare group activities that include the skills taught in *Show and Tell!* Finally, I think children will use it to have fun as they show and tell their very own stories through the infographics they create. ■

Marino, Mukherjee, Pollard, and Quackenbush
Elected Members of National Academy of Medicine

Miguel Marino	Bhramar Mukherjee	Katherine S. Pollard	John Quackenbush

Miguel Marino, Bhramar Mukherjee, Katherine Pollard, and John Quackenbush were recently elected to the National Academy of Medicine. The October 17 announcement states, "Election to the Academy is considered one of the highest honors in the fields of health and medicine and recognizes individuals who have demonstrated outstanding professional achievement and commitment to service."

Their citations read as follows:

Miguel Marino, *associate professor, departments of family medicine and biostatistics, Oregon Health and Science University*

For being a world leader in primary care biostatistics. As co-founder of the Primary Care Latino Equity Research lab, he pioneers novel quantitative approaches to study racial/ethnic subpopulations in electronic health record (EHR) data. His pioneering methods to use EHR data for health equity research have revolutionized this field.

Bhramar Mukherjee, *John D. Kalbfleisch Collegiate Professor and chair, department of biostatistics, and professor, department of epidemiology, University of Michigan School of Public Health*

For seminal contributions to statistical methods in public health and biomedical sciences; pioneering methods for the integration of genes, environment, and disease phenotypes across health conditions; analysis of the COVID-19 epidemic that have informed policy in India; exemplary leadership; and nationally recognized initiatives to diversify the data and statistical science workforce.

Katherine S. Pollard, *director, Gladstone Institute of Data Science and Biotechnology; professor, University of California at San Francisco; and investigator, Chan Zuckerberg Biohub*

For discovering human accelerated regions and demonstrating that these fast-evolving developmental enhancers regulate psychiatric disease genes uniquely in humans. Her open-source software for gene expression, comparative genomics, and microbiomes are used worldwide.

John Quackenbush, *Henry Pickering Walcott Professor of Computational Biology and Bioinformatics and chair, department of biostatistics, Harvard T.H. Chan School of Public Health*

For being a pioneer in computational and systems biology and reproducible research with a record of continuous innovation. His recent work bridges the gap between genetics and gene regulation, giving unprecedented insight into human health and disease, including how a person's sex influences disease risk and response to therapy. ∎

Two Honored with 2022 Jeanne E. Griffith Mentoring Award

Montserrat Garcia-Closas

Barry Graubard

This year marks the 20th annual presentation of the Jeanne E. Griffith award and the 14th year the Government Statistics Section has managed the award process. For the second time in the award's history, there are two recipients: Montserrat Garcia-Closas, deputy director of the division of cancer epidemiology and genetics at the National Cancer Institute, and Barry Graubard, senior investigator of the biostatistics branch at the National Cancer Institute.

Both were chosen for their outstanding mentoring and will be honored during a virtual ceremony hosted by the Interagency Council on Statistical Policy and an in-person celebration during the annual holiday party hosted by the Washington Statistical Society.

Montserrat Garcia-Closas

Garcia-Closas, who also serves as the director of the National Cancer Institute Trans-Divisional Research Program, is a world-renowned leader who has done multidisciplinary research in the molecular epidemiology of breast cancer and risk prediction. She has mentored many junior scientists, particularly statisticians and data scientists, but also classical epidemiologists, encouraging them to address problems by integrating different approaches and data elements.

Garcia-Closas has made a major impact on the careers of many who have come through the division of cancer epidemiology and genetics for training.

Her letter writers included pre-doctoral fellows, post-doctoral fellows, young investigators and branch chiefs, all attesting to her mentoring generosity.

Garcia-Closas embodies the spirit of the Jeanne E Griffith Mentoring Award, as she mentors at the individual level but also leverages her leadership role to create the next generation of quantitative scientists in emerging areas of research.

Barry Graubard

A long-time government statistician, Barry Graubard is a gifted researcher who focuses on developing statistical methods for efficiently using complex sample designs in cancer surveillance and epidemiology. He is a fellow of American Statistical Association and American Association for the Advancement of Science, as well as a recipient of the Mentoring Award from the ASA and National Cancer Institute.

Graubard's commitment to mentoring stands out in every letter of support in his nomination package. His philosophy of mentoring was echoed by all: Barry is extraordinarily accessible

Jeanne E. Griffith, 2001

and exceedingly generous with his time.

Another aspect that stands out is his commitment to the progress of fellows beyond their training period.

Graubard, with his sustained efforts throughout his tenure in the federal government, is highly deserving of the Jeanne E. Griffith Mentoring Award.

The Award

The Jeanne E. Griffith Mentoring award honors Griffith, who died in 2001 after working for more than 25 years in the federal statistical system. The award acknowledges supervisors; technical directors; team coordinators; or other members of federal, state, or local government statistical staff who make unique efforts to mentor and encourage younger staff at all levels to learn and grow and to recognize and seize career opportunities. The award includes a plaque and $1,000 honorarium.

Nominations for the 2023 award can be submitted beginning January 2. Questions about the award may be sent to Rick Peterson at *rick@amstat. org* or Rajeshwari Sundaram at *sundaramr2@mail.nih.gov*. ∎

King of Belgium Presents Statistics Prize

King Philippe of Belgium hands the Rousseeuw Prize for Statistics medal to James Robins of Harvard, the founder of the awarded team.

From left: Thomas Richardson of the University of Washington, Eric Tchetgen Tchetgen of the University of Pennsylvania, James Robins of Harvard University, Peter Rousseeuw, Andrea Rotnitzky of the Universidad Torcuato di Tella in Argentinië, and Miguel Hernán of Harvard University

Photos by Filip Van Loock

The first Rousseeuw Prize for Statistics was awarded to the following five researchers on October 12 for their pioneering work on causal inference with applications in medicine and public health: **James Robins, Miguel Hernán, Thomas Richardson, Andrea Rotnitzky** and **Eric Tchetgen Tchetgen.**

The ceremony took place at the University of Leuven in Belgium and included presentations by both Peter Rousseeuw and David Hand. Rousseeuw spoke about the goal of the prize, while Hand described the laureates' work.

After the presentations, his Majesty King Philippe of Belgium handed out the awards. Robins followed with a word of thanks, and Cava Strijkkwartet provided a musical interlude.

Visit the Rousseeuw Prize website at *https://rousseeuwprize.org/ ceremony* to watch videos of the presentations. ∎

ASA Fellow **Mulugeta Gebregziabher** was recently awarded the Victor Sidel and Barry Levy Award for Peace by the American Public Health Association for bringing global attention to the Ethiopian government's human rights violations against residents of the Tigray region.

A native of the Tigray region, Gebregziabher has used published research, global symposiums, and advocacy of world leaders to inform public health professionals, governments, and academia about the attacks on Tigray's civilians, health care infrastructure, and food security.

Each year, the American Public Health Association honors excellence in public health leadership and innovation from state and local health officials to those speaking up for public health from the halls of Congress. For more information and to view additional honorees, visit *http://bit.ly/3UQY78P.* ∎

Professor **Hollylynne Lee** and senior research scholar **Gemma Mojica** of North Carolina State University will work to transform teacher preparation for data science and statistics education with a grant of $2.5 million from the National Science Foundation.

In 2016, both Lee and Mojica addressed preparing teachers through the NSF-funded Enhancing Statistics Teacher Education with E-Modules (ESTEEM) project. ESTEEM provides free, accessible tools that allow pre-service middle- and high-school mathematics teachers to engage with meaningful materials and has been used in courses by more than 70 teacher educators across the country.

"Our prior work has filled a gap in teacher education by providing high-quality curricular materials. All of our

Hollylynne Lee

Gemma Mojica

materials have been packaged into learning management systems that faculty can upload into their own courses," Mojica said. "We will be expanding our materials to incorporate more practices and processes related to data science."

This new project aims to build and sustain a data science and statistics teacher education network and provide high-quality teacher education materials.

The team plans to create a website to house educational and curricular materials related to data science and statistics education and offer educators a chance to upload resources and materials they have found useful in their own classrooms.

"We will have online spaces for the community to share resources, engage in professional learning, and connect with each other," Lee said. "Throughout the project, there will be webinars and convenings to provide forums to discuss issues and tackle problems of practice that faculty identify as some of their most pressing needs."

For details, visit *http://bit.ly/3WRjN6q.*∎
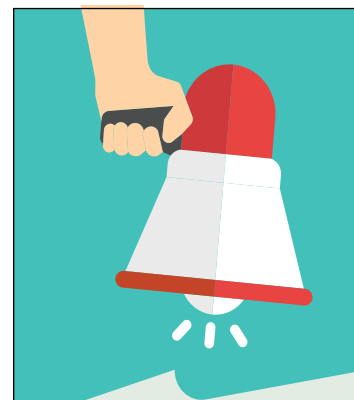
How Can We Help?

We want to help you share your own news with colleagues and showcase your latest successes.

It is important to us that everyone knows about your research, recent awards, and promotions!

If you have any news you would like to share, email *megan@amstat.org*.

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

AWARD	DEADLINE	QUESTIONS & NOMINATIONS
Gottfried E. Noether Awards	January 15	*awards@amstat.org*
Bob Riffenburgh Award	January 15	*awards@amstat.org*
Karl E. Peace Award	February 1	*awards@amstat.org*
W.J. Dixon Award for Excellence in Statistical Consulting	February 15	*awards@amstat.org*
Harry V. Roberts Statistical Advocate of the Year Award	February 15	*awards@amstat.org*
Waller Awards	February 15	*awards@amstat.org*
Samuel S. Wilks Memorial Award	February 15	*awards@amstat.org*
W.J. Youden Award in Interlaboratory Testing	February 15	*awards@amstat.org*
Statistics in Physical Engineering Sciences Award	February 20	*awards@amstat.org*
Gertrude M. Cox Scholarship	February 23	*awards@amstat.org*
Edward C. Bryant Scholarship Trust Fund	March 1	*awards@amstat.org*
Excellence in Statistical Reporting Award	March 1	*awards@amstat.org*
ASA Fellows	March 1	*awards@amstat.org*
ASA Mentoring Award	March 1	*awards@amstat.org*
Outstanding Statistical Application Award	March 1	*awards@amstat.org*
Statistical Partnerships Among Academe, Industry, and Government (SPAIG) Award	March 1	*awards@amstat.org*
Annie T. Randall Innovator Award	March 15	Sherri Rose (*sherrirose@stanford.edu*)
Biopharmaceutical Section Scholarship Award	March 15	Biopharmaceutical Community Website (*community.amstat.org/ biop/awards/scholarship*)
Founders Award	March 15	*awards@amstat.org*
ASA Pride Scholarship	March 31	Donna LaLonde (*donnal@amstat.org*)
Government Statistics Section Wray Jackson Smith Scholarship	April 1	David Banks (*banks@stat.duke.edu*)
Causality in Statistics Education Award	April 5	*awards@amstat.org*
Links Lecture Award	July 1	*awards@amstat.org*
Dorothy Marie Lamb and Annette Lila Ryne Memorial Scholarship	July 15	*awards@amstat.org*
Health Policy Statistics Section Achievement Awards	September 15	*www.asahealthpolicy.org/ for-students*
Lester R. Curtin Award	October 15	*awards@amstat.org*
Deming Lecturer Award	October 15	*awards@amstat.org*
Lingzi Lu Memorial Award	October 15	*awards@amstat.org*

section news

Text Analysis

David Banks, Text Analysis Interest Group Chair

The Council of Sections recently approved the petition for the Text Analysis Interest Group to become a section. The interest group will officially become a section on January 1, 2023, and Wendy Martinez, a former president of the ASA, will serve as the first chair.

More than 200 ASA members signed the petition and promised to become members of the new section. The following is a list of the sorts of problems that arise in text analytics:

- It is important to study US political blogs over time to identify changing themes and rhetorical styles, understand sentiment, and quantify polarization. Tim Au, now at Google, did significant work on this.

- To the extent Wikipedia is a mirror of human knowledge, it may be possible to find gaps. Also, the network structure and topic modeling give independent pieces of information about Wikipedia—if the clique structure in the network corresponds to distinct topics, it corroborates the underlying organizational coherence. Dave Blei at Columbia has worked on aspects of this problem.

- One can apply latent Dirichlet allocation (LDA) to more than text. In particular, Qiuyi Wu, a graduate student at the University of Rochester, has applied LDA to music, and it could probably be applied to ecological diversity, visual arts, and other fields.

- Many statisticians are attempting to mine medical records to find patterns of symptoms, comorbidities, or treatments. Text analysis can also be used to discover medical insurance fraud or improper treatment. Bethany Percha at Mount Sinai and Kasper Jensen at the University of Warwick have independently done text analysis of medical records, but there are many others, often working in multidisciplinary teams.

- Text analysis can apply to many data sets in the federal government. The Consumer Protection Agency receives written reports about washing machines that catch fire. The FDA's Adverse Event Reporting System has records of bad outcomes associated with specific drugs and drug combinations. The US Department of Transportation's Fatality Analysis Reporting System contains reports on all fatal accidents involving vehicles. There are statisticians at all these agencies who either use or want to use text analytics to find early warnings. This is likely to be one of Wendy Martinez's pet projects when she takes charge.

- In surveys of all kinds (federal, state, commercial, political), response rates are falling. Transcribed conversational interviews may be more robust and better able to collect nuanced information. Nick Fisher, a private consultant, collected such survey data, and Christine Chai, who is now at Microsoft, analyzed it.

There is no shortage of work in this field, and members of the Text Analysis Interest Group are keen to transition to full section status. ∎

Survey Research Methods

The Survey Research Methods Section (SRMS) had its public business meeting August 3 in Washington, DC—the first in-person section meeting since the beginning of the COVID-19 pandemic. Hosted by section chair Jean Opsomer, the meeting allowed those who attended the opportunity to meet with the current officers and brought together survey researchers in an informal setting.

At the time of JSM 2022, SRMS had 1,142 members, including 399 student members. The section is in good financial shape, as reported by treasurer Jessica Kohlschmidt. Our account balance is in the ASA target zone of two to three times our annual expenses.

Section chair-elect Brady West emphasized that SRMS members have free access to all the past American Association for Public Opinion Research webinars as a benefit of membership.

Council of Sections representative Stas Kolenikov mentioned he will be collecting ideas and comments about ASA and SRMS activities. Questions he is seeking answers for are the following:

- Should job postings be removed from section postings and organized as part of a single larger list advertised by the ASA?

- Is it a good idea for the Text Analysis Interest Group to become a section?

- What are thoughts about increasing the section's membership?

- Who should the section put forward to receive the Outstanding Section Service Award in 2023?

During JSM 2022, SRMS sponsored or cosponsored four invited sessions, nine topic-contributed sessions, seven contributed sessions, one poster session, and four roundtable discussions.

At our business meeting, we recognized Pushpal Mukhopadhyay with the Outstanding Section Service Award and Paul Beatty with the Social Statistics Section Outstanding Section Service Award, both from 2020 when the conference was held virtually. We also celebrated the SRMS Student Travel Award winners, the GSS/SRMS/SSS Student Paper Award winners, and the four SRMS members who became fellows: Brady West of the University of Michigan; Jose Zubizarreta of Harvard Medical School; Kelly McConville of Harvard University; and Megan Price of the Human Rights Data Analysis Group.

Additionally, three book raffles took place and books from Springer, CRC, and SAS covering a wide range of topics in statistics were given away.

Besides these *Amstat News* articles, look for section news in the January and July SRMS newsletters in preparation for JSM 2023 in Toronto, Ontario, Canada, August 5–10. Also, look for the 2021 *JSM Proceedings* to appear on our website at *www.asasrms.org/Proceedings/index.html* next year (in addition to all proceedings papers going back to 1958) and make plans to attend our SRMS business meeting in Toronto.

Finally, the section is co-sponsoring the BigSurv23 "Big Data Meets Survey Science" conference in Quito, Ecuador, October 26–29, 2023, so look out for that opportunity, as well. ∎

Quality and Productivity

Sarah Burke, 2023 Q&P Chair

The Quality and Productivity executive committee met October 28 to discuss goals for Q&P in 2023. Over the last two years, great strides were made to improve the documentation and turnover processes for the executive committee. With those improvements in mind, the goals for 2023 are focused on broadening Q&P's member base.

The goals for 2023 are as follows:

- Increase student participation in conferences and section membership. Many students participate in the Quality and Productivity Research Conference, and we have historically had students attend the Fall Technical Conference. We plan to have a Q&P representative attend these conferences with the goal of encouraging students to also join the Q&P Section.

- Identify areas of improvement in communicating Q&P awards and events to a wider audience to encourage increased participation. This goal seeks to increase the number of nominations for Q&P awards and participation at conferences. Attendance at many conferences over the last year was low, likely due to after effects of the COVID-19 pandemic. We seek to encourage in-person attendance in 2023.

- Collaborate with a new ASA section to broaden the membership base. The primary avenue for this will be through JSM and a joint mixer, which we currently cosponsor with the Section on Physical and Engineering Sciences. Q&P will identify another ASA section to partner with to identify other ASA members that may be interested in Q&P's mission.

- Continue improvements of the officer turnover process on the Q&P executive committee to ensure the updated documentation and administrative processes established over the last two years continue to carry over. This includes establishing a general repository that allows transfer of ownership as the chair of Q&P changes.

The purpose of the initiatives outlined here is to broaden the Q&P membership base and improve the functionality of the Q&P section. ∎

Indiana

■ Faculty positions (rank commensurate with experience/qualifications), Department of Biostatistics/Indiana University School of Medicine, Indianapolis, IN. Duties: statistical research, teaching, collaborative research. PhD in biostatistics, statistics or related field, excellent communication skills required; Practical experience preferred. Competitive salary/excellent benefits. Submit CV, research/teaching statements, 3 references to: *https://indiana.peopleadmin.com/postings/12607.* Indiana University is an EEO/AA employer, M/F/D/V.

Massachusetts

■ Tenure Track Assistant Professor, Mathematical Sciences – Bentley University. The Department of Mathematical Sciences at Bentley University—an independent, private business-oriented university located in suburban Boston—invites applications for a tenure track assistant professor position, to begin in fall 2023. To view more information about this exciting opportunity and to apply, please go to: *https://bentley.wd1.myworkdayjobs.com/en-US/faculty/details/Tenure-Track-Assistant-Professor--Mathematical-Sciences_R0003244.*

Minnesota

■ The Division of Biostatistics, School of Public Health, University of Minnesota seeks applicants for a non-tenure track assistant professor who will be a member of the Analytics Core of the Masonic Institute for the Developing Brain (MIDB). The successful candidate will collaborate with investigators at MIDB and the broader University on research in neurobehavioral development. Please visit *https://hr.myu.umn.edu/jobs/ext/352223* for additional information or to apply.

Missouri

■ An interdisciplinary research team at Missouri S&T studying the effect of sleep deficit on human performance seeks to hire a post-doctoral fellow in statistics by 1/01/2023. The candidate should have completed a PhD in statistics or a related field at the time of appointment. Applications must be submitted to Missouri S&T's Human Resources website *https://hr.mst.edu/careers/academic-employment* to Position #00083388 by December 1, 2022.

■ Missouri University of Science & Technology invites applications for a Kummer Endowed Professorship in the Mathematics and Statistics Department, with a start date of August 2023. The department seeks an exceptional scholar with a strong research record in data science. Learn more about the application process at *www.mathjobs.org/jobs/list/20875* and the department at *https://math.mst.edu.* For full consideration, applicants should apply by January 9, 2023.

New Jersey

■ Rutgers School of Public Health seeks an assistant professor in biostatistics-tenure track. Qualified candidates should have a PhD or equivalent in biostatistics or a related discipline, demonstrate potential for scholarly achievement and to obtain extramural funding to sustain their research program, demonstrate enthusiasm for teaching and mentoring a new generation of public health researchers, and a commitment to diversity, equity, inclusion, justice, and anti-racism. *https://jobs.rutgers.edu/postings/179205.*

Pennsylvania

■ The Wharton Statistics and Data Science Department, University of Pennsylvania, seeks a postdoctoral researcher. The position is for two years beginning in Summer 2023, with a possible extension to three. The primary focus is for the scholar to develop her or his research. A light teaching load is involved. A PhD is required. Please visit our website to apply: *https://statistics.wharton.upenn.edu/recruiting/dept-postdoc-position.* Direct questions to *stat.postdoc.hire@wharton.upenn.edu.* The University of Pennsylvania is an EOE. Minorities / Women / Individuals with disabilities / Protected Veterans are encouraged to apply.

Texas

■ Rice University's Statistics Department is seeking applications for a tenure-track assistant professor position in the general area of statistics. Seeking candidates with highly technical skills, strong evidence of creativity and innovation, strong interest in interdisciplinary collaboration, who will teach undergraduates/graduates, and engage in service and advance diversity,

equity, and inclusion in the discipline. Appointment starts fall 2023. Apply to *https://apply.interfolio.com/115383*.

■ Rice University's Department of Statistics seeks applicants for a full-time lecturer position of 1-2 years with the possibility of renewal. Duties include teaching both undergraduate level and masters level statistics courses, including mathematical statistics; 2-3 courses per semester; providing service to the department. Requirements - PhD degree in statistics, applied mathematics, computer science or a related field. See full description and apply to *https://apply.interfolio.com/115285*.

■ The Department of Mathematical Sciences at The University of Texas at El Paso (UTEP) seeks a data scientist with expertise in statistical modeling of big data and/or high-performance data analytics, for a tenure-track Assistant

Professor position. Successful candidates will develop research programs, mentor and teach undergraduate and graduate students. Experience in applied interdisciplinary research/industry is encouraged. To view the full ad and apply visit *www.utep.edu/employment*. UTEP is an Equal Opportunity Employer.

■ The University of Texas School of Public Health at Houston invites applications to fill an open-ranked tenure-track faculty position within the department of biostatistics and data science at the Houston campus. Responsibilities include methodological/theoretical and collaborative research, teaching, mentorship of graduate students, and service. Review begins immediately and continues until the position is filled. Apply at *http://p.rfer.us/UTHdoSDQe*. UTHealth is committed to providing equal opportunity in all employment-related activities without regard to race, color, religion, sex, sexual

orientation, national origin, age, disability, genetic information, gender identity or expression, veteran status or any other basis prohibited by law or university policy. Reasonable accommodation, based on disability or religious observances, will be considered in accordance with applicable law and UTHealth policy. The University maintains affirmative action programs with respect to women, minorities, individuals with disabilities, and eligible veterans in accordance with applicable law

■ The School of Mathematical and Statistical Sciences at the University of Texas Rio Grande Valley invites applications for two tenure-track assistant professor positions in statistics beginning 09/01/2023, subject to funding availability. A PhD in statistics or closely related fields is required. For full consideration, submit required documents online *https://careers.utrgv.edu/postings/35958*. The search will continue until the position is filled. ■

Institute of Statistical Science, Academia Sinica, Taiwan

Tenure-Track Faculty Positions

The Institute of Statistical Science of Academia Sinica is pleased to invite applications for our tenure-track faculty positions. Academia Sinica, the most preeminent academic research institution in Taiwan, offers a secured research environment facilitated with rich collaboration opportunities as well as the freedom of conducting independent research. With a strong tradition of theoretical and interdisciplinary research, the Institute of Statistical Science is aiming for global excellence in mathematical statistics and various statistical applications.

Applications are invited for tenure-track appointments as Full/Associate/ Assistant Research Fellows (equivalent to Full/Associate/Assistant Professors in Universities) at the Institute of Statistical Science to commence on August 1, 2023 or as soon as possible thereafter. Applicants should possess a Ph.D. degree in Statistics, Biostatistics, Computer Science, Data Science or related areas, and should submit: (1) a cover letter, (2) an up-to-date curriculum vita, (3) a detailed publication list, (4) a research proposal, (5) three letters of recommendation, (6) representative publications and/or technical reports and (7) advisers' names of master and PhD degrees. Additional supporting materials such as transcripts for new Ph.D. degree recipients may also be included. Electronic submissions are encouraged. Applications should be submitted to

Dr. Hsin-Chou Yang
Chair of the Search Committee
Institute of Statistical Science,
Academia Sinica
128 Sec. 2 Academia Road, Taipei
11529, Taiwan, R.O.C.
Fax:+886-2-27886833
E-mail: recruit@stat.sinica.edu.tw

Application materials should be received by **December 16, 2022** for consideration, but early submissions are encouraged.

Columbia University in the City of New York Department of Statistics
Lecturer in Discipline: Starting Fall 2023

DESCRIPTION: The Department of Statistics invites applications for multiple positions at the rank of Lecturer in Discipline that begins July 1, 2023. These are full-time appointments with multi-year renewals contingent on successful reviews. These positions will contribute to the Departmental educational mission at the undergraduate and masters level.

Lecturers in Discipline are officers in the University who meet a programmatic need for instruction in specialized fields. The selected candidates will be expected to teach up to 3 courses per semester. A Ph.D. in Statistics or related field by the date of appointment and a commitment to high-quality teaching at both the undergraduate and MA levels in Statistics and/or Probability are required. Candidates will be expected to participate in the full gamut of statistics education including curriculum improvement, modifying and developing courses, and exploring new strategies for the teaching of statistics. The Department currently consists of 38 faculty members, 55 PhD students, and over 300 MA students. The Department has been expanding rapidly and, like the University itself, is an extraordinarily vibrant academic community. We are especially interested in candidates who through their research, teaching and/or service will contribute to the diversity and excellence of the academic community. Women and minorities are especially encouraged to apply. For further information about the Department and our programs, please go to our webpage at: *http://www.stat.columbia.edu*

QUALIFICATIONS: A Ph.D. in Statistics or related field by the date of appointment and a commitment to high-quality teaching.

Application Instructions: All applications must be submitted through Columbia's online Academic Search and Recruiting portal (ASR) *http://apply.interfolio.com/115313* and must include the following materials: cover letter, curriculum vitae, statement of teaching philosophy, research statement, evidence of teaching effectiveness (teaching evaluations), a sample of course syllabus and the names of 3 references, who will be asked to upload letters of recommendation on their behalf.

Inquiries may be made to *dk@stat.columbia.edu*
Review of applications begins on February 1, 2023 and will continue until the positions are filled.

Equal Employment Opportunity Statement Columbia University is an Equal Opportunity Employer /Disability / Veteran

Columbia University in the City of New York Department of Statistics

Assistant Professor (Limited Term): Starting Fall 2023

DESCRIPTION: The Department of Statistics invites applications for multiple four-year term positions at the rank of Assistant Professor to begin July 1, 2023. A PhD in statistics or a related field by the date of appointment is required, as is a commitment to high quality research and teaching in statistics and/or probability. Candidates will be expected to sustain an active research and publication agenda and to teach in the departmental undergraduate and graduate programs. Candidates with expertise in machine learning, big data, mathematical finance and probability theory are particularly encouraged to apply. The department expects to support successful candidates with a generous research allowance. The expected teaching load is three semester-long courses per year.

The department currently consists of 38 faculty members and 55 PhD students. The department has been expanding rapidly and, like the University itself, is an extraordinarily vibrant academic community. We are especially interested in candidates who, through their research, teaching and/or service will contribute to the diversity and excellence of the academic community. Women and minorities are especially encouraged to apply. For further information about the department and our activities, centers, research areas, and curricular programs, please go to our web page at: *http://www.stat.columbia.edu*

QUALIFICATIONS: PhD in statistics or a related field by the date of appointment is required, as is a commitment to high quality research and teaching in statistics and/or probability.

Application Instructions: All applications must be submitted through Columbia's online Academic Search and Recruiting portal (ASR) *http://apply.interfolio.com/115311*. The application must include a cover letter, curriculum vitae, teaching statement, research statement and the names of 3 references, who will be asked to upload letters of recommendation.

Inquiries may be made to Dood Kalicharan at *dk@stat.columbia.edu*
Review of applications begins on December 1, 2022, and will continue until the positions are filled.

Equal Employment Opportunity Statement
Columbia University is an Equal Opportunity Employer / Disability / Veteran

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Top Ten Statistical Terms That Could Be Euphemisms for Death

Amstat News continues its hilarious offering by ASA Executive Director Ron Wasserstein with the "Top Ten Statistical Terms That Could Be Euphemisms for Death." He says, "Perhaps the biggest certainty of life is that it ends. And we have many euphemisms for referring to this uncomfortable certainty. People pass on, kick the bucket, bite the dust, check out, croak, give up the ghost, and so on. Well, it occurred to me that statistical terms are quite possibly useful as euphemisms for death."

Wasserstein

PODCAST

To listen to the *Practical Significance* podcast, visit *https://magazine.amstat.org/podcast*-2.

10

The null hypothesis of life has been rejected at every alpha level.

09

They have gone on to their posterior distribution.

08

They have permanently regressed to the mean.

07

They are performing their final transformation.

06

They used their last degree of freedom.

05

They are on a long-term downward trend.

04

Their time series is seriously stationary.

03

They are no longer in the sampling frame of life.

02

They have wrangled their last data.

#01

They are away applying decomposition techniques.

SDSS

SYMPOSIUM ON DATA SCIENCE & STATISTICS

BEYOND BIG DATA: INQUIRE, INVESTIGATE, IMPLEMENT, INNOVATE
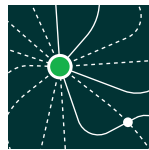ST. LOUIS, MISSOURI • MAY 23–26, 2023

SAVE THE DATE!

SDSS is designed for data scientists, computer scientists, and statisticians who analyze and visualize complex data sets.

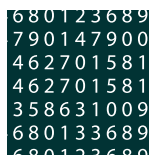**Innovative sessions focus on the following six tracks:**

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KEY DATES

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Early Registration Deadline: April 20, 2023

Housing Reservation Deadline: May 1, 2023

Regular Registration Deadline: May 26, 2023

Onsite Registration: May 23–26, 2023

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