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AMSTATNEWS

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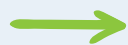
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In Memoriam: 1992 ASA President Katherine Wallman
Remembering Dionne Price with Her Own Wise Words



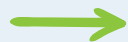
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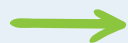
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AMSTATNEWS

MARCH 2024 • ISSUE #561

Executive Director

Ron Wasserstein: ron@amstat.org

Associate Executive Director

Donna LaLonde: donnal@amstat.org

Director of Science Policy

Steve Pierson: pierson@amstat.org

Director of Finance and Administration

Derek Curtis II: derek@amstat.org

Managing Editor

Megan Murphy: megan@amstat.org

Communications Strategist

Val Nirala: val@amstat.org

Advertising Manager

Christina Bonner: cbonner@amstat.org

Production Coordinators/Graphic Designers

Olivia Brown: olivia@amstat.org

Megan Ruyle: meg@amstat.org

Contributing Staff Members

Naomi Friedman • Kim Gilliam • Amanda Malloy

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American Statistical Association
732 North Washington Street
Alexandria, VA 22314-1943 USA
(703) 684-1221

ASA GENERAL: asainfo@amstat.org

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AMSTAT EDITORIAL: amstat@amstat.org

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American Statistical Association



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

- 3 President's Corner
- 5 My ASA Story: Julia Schedler, Assistant Professor
- 6 2024 Election—Board of Directors Candidate Statements
- 12 NSF Q&A: Statistics and the Division of Environmental Biology
- 13 Social Science Advocacy Day Returns to DC
- 14 Getting to Know Col. Nicholas Clark of West Point
- 16 If Not You, Then Who?
- 21 ASA GivesBack: Stories of Giving Back
- 22 In Memoriam: 1992 ASA President Katherine Wallman
- 26 JEDI Corner: Building Successful Mentor/Mentee Relationships in the Hybrid Work Era
- 28 Celebrating Women in Statistics and Data Science



In Memoriam: 1992 ASA President Katherine Wallman (left) with Vince Barabba and Janet Norwood in 1989. Page 22

columns

- 32 **STATS4GOOD**
Community-Based Data for Good Projects:
Think Statistically, Act Locally

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.

- 34 **STATtr@k**
Do Student Paper Competitions Really Matter?

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

ANNOUNCEMENTS

New Artificial Intelligence Interest Group

ASA members are interested in starting an interest group that focuses on organizing activities that empower statisticians to participate in artificial intelligence research and leadership. If this sounds interesting to you, sign up at <https://bit.ly/499ZtIV> to be part of the initiative.

Request for Proposals to Host GROW Conference

Members of the GROW steering committee are requesting proposals from groups wishing to host the GROW conference in 2026 and/or 2027. Managed by the Institute for Mathematical and Statistical Education, GROW is intended to provide support for undergraduate students considering graduate studies in the mathematical sciences.

Proposals are due by April 1. For information about the conference, visit www.imsi.institute/grow. A description of the expected proposal elements can be found at <https://bit.ly/3OjVtaO>.

MORE ONLINE

Visit <https://magazine.amstat.org> or scan the QR code below to read the following articles:

ASA Connects Policymakers with Congressional Staffers on Criminal Justice

As part of its science policy work, the American Statistical Association organized a congressional briefing in January to highlight the role of statistics and research in informing criminal justice policymaking. Cosponsored by the Consortium of Social Science Associations and moderated by ASA Fellow Greg Ridgeway, the webinar featured Nancy La Vigne, director of the National Institute of Justice, and Kevin Scott, acting director of the Bureau of Justice Statistics. View the recording at <https://bit.ly/3UG78EN>.

Authenticity, Communication Key to Collaborating as Women in Statistics and Data Science

Elinor Jones, Lucia Barbone, and Kelly H. Zou discussed their experiences as women collaborating with researchers and stakeholders during an hour-long panel organized by the Royal Statistical Society's Young Statisticians Section in honor of the International Day for Women in Statistics and Data Science.

Scan the QR code to visit
Amstat News online.



departments

36 meetings

Registration Open for ICES VII in Glasgow, Scotland

Proposals Being Accepted for Health Policy Statistics Conference



San Francisco Bay Area Chapter Event Explores Impact of ChatGPT on Statistics, Data Science. Page 42

member news

38 People News

42 Section • Chapter • Committee News

45 Professional Opportunities



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Remembering Dionne Price with Her Own Wise Words

“For wise and thoughtful leadership of the ASA; and for a passionate commitment to promote the practice and profession of statistics for all members of the statistics community.”

This is why we honored Dionne Price at the 2023 Joint Statistical Meetings for her service as the American Statistical Association’s 118th and first African American president. She passed away too early, on February 22, after bravely battling cancer this past year. I extend my deepest condolences to Dionne’s family, friends, and colleagues during this difficult time.



Dionne Price

In this President’s Corner, using Dionne’s own words, let us remember and celebrate our generous, intelligent, and compassionate colleague and friend we were privileged to know. I hope these words are a source of inspiration and comfort.

“I fell in love with biostatistics during a summer internship as an undergraduate. I was an applied mathematics major searching for a direction, and an internship at the National Institutes of Health ignited my passion for statistics. The rest as we say, ‘is history.’ My passion for the ‘practice and profession of statistics’ has grown stronger because I am fortunate to work with a talented group of statisticians and other professionals and able to serve our community.” – January 2023 President’s Corner

“What inspires me is being able to use statistics to make a difference in the lives of others.” – *ThisIsStatistics* video featuring Dionne

“The ASA’s vision statement imagines a world that relies on data and statistical thinking to drive discovery and inform decisions. With our vision as our guide, we must be prepared to assume leadership roles on many levels. For some, this translates to a career that includes formal leadership positions within organizations. These formal roles are certainly important, but we also must be prepared to lead as members of our many communities. ... This recommendation extends beyond the classroom and into our workplaces and communities. *As statisticians and data scientists, we have the knowledge and must develop the ability to assist our colleagues and collaborators in understanding that statistical thinking is essential to solving problems and making sound decisions.*” – May 2023 President’s Corner (*my emphasis*)

“We are students, we are educators, we are professionals, we are leaders, we are visionaries, we are problem solvers, we are innovators, we are story tellers, we are community, we are statisticians and data scientists informing decisions and driving discoveries!” – ASA President’s Address, August 2023

“We know that our work affects the foods we eat, the weather forecasts, the transportation systems, and economic health. ... However, we are not resting on our laurels. We are continuing our influence. Some of the areas where we are providing statistical leadership in our evolving global landscape include data science education, machine learning, human rights statistics, and high-dimensional genomics and microbiome analyses. ... Statisticians and data scientists were front and center throughout the pandemic using data and statistical knowledge to inform decisions about



Madhumita (Bonnie) Ghosh-Dastidar

potential treatments and vaccines for COVID-19. Our efforts spanned across academia, industry, and government; we were dedicated and committed to ending the global pandemic.” – ASA President’s Address, August 2023

“The success of JSM stands as evidence of the unwavering spirit of scientific inquiry, collaboration, and progress that defines our profession.” – September 2023 President’s Corner

“Do what you enjoy. That’s my first piece of advice. Second, explore and take advantage of opportunities to become involved. I remember early in my career, I volunteered at the registration desk for a workshop sponsored by the Biopharmaceutical Section of the ASA. And I volunteered for multiple years at the registration desk, and I enjoyed it. An added benefit that I may not have appreciated at that time was I was meeting people, and I was networking while volunteering. And that simple act led to other opportunities in the biopharmaceutical section, which set me on a path to active volunteering and immense opportunities.” – *Practical Significance*, January 2023, responding to a question about advice for students and early-career statisticians

“We envision a world in which statistical literacy is embraced, leading to a more informed citizenry capable of critically assessing claims, navigating uncertainties, and contributing to evidence-based decision-making.” – August 2023 President’s Corner announcing the Telling Our Stories project

“My vision of our future is one that has 1) a rich pipeline of students in statistics and data science, 2) increased awareness and visibility of our community and our many efforts, and 3) ensuring our future leaders are prepared to lead with statistics.” – ASA President’s Address, August 2023

These quotes from Dionne, especially the last one, bring us to her legacy. I wrote this column two days after her passing, while many are still processing this immense loss and what we must

collectively do to honor her memory and immense contributions to our profession and the ASA. When introducing Dionne for her president’s address last summer in Toronto, former president Kathy Ensor said the following:

Dionne Price’s journey as a leader has been defined by her passion for creating impactful change in the lives of others. Dionne has an innate ability to bring people together, empowering them to collaborate towards a common goal. Her inclusive approach ensures that diverse voices are heard. Beyond her role as ASA president, she continues to be a source of inspiration to countless individuals, mentoring and nurturing emerging leaders. Her commitment to empowering the next generation of change makers ensures a sustainable legacy of progress that will endure far beyond her tenure.

We will honor Dionne’s legacy by continuing to cherish, pursue, and, ultimately, realize her vision for the future of our profession. I will conclude my column with words from the citation Dionne received to honor her service as the 2023 ASA president:

For commitment to using statistical practice to drive discovery and inform decision-making for the public good; for leadership at the Food and Drug Administration to ensure the safety and efficacy of drugs and biologics; for extraordinary efforts and teamwork to develop innovative study designs for rapid response to the COVID-19 pandemic; for wise and thoughtful leadership of the ASA; and for a passionate commitment to promote the practice and profession of statistics for all members of the statistics community.

M. Ghosh Dastidar

MY ASA STORY

Julia Schedler, Assistant Professor

Throughout my career as a statistician, members of the ASA have always been there to guide me in my journey and contributed to many full-circle moments.

My statistics journey began in my junior year of high school when I took AP Statistics. Luckily, I had a skilled and inspiring teacher, Christine Drago. As a senior, I was her assistant and she introduced me to meta-analyses and encouraged me to apply to Cal Poly, San Luis Obispo, to study statistics. She was aware of the statistics department because of an INSPIRE workshop for AP Statistics teacher training, which I recently discovered was partly sponsored by the American Statistical Association.

At Cal Poly, I entered as a statistics major and soon added math as a double major. Some of my peers went to the Joint Statistical Meetings, which was the first time I became aware of the ASA. Everyone I knew who went had a blast and got a ton out of the experience, so I was eager to see what it was all about.

However, I did not join the ASA officially until JSM 2019 in Denver, when I was nearing the end of my PhD program in statistics at Rice University. I thoroughly enjoyed being around so many statisticians, hearing about the variety of problems they work on, and sharing my work with them.

Around the time I defended my PhD in late 2019, I started a position in the educational technology industry at zyBooks, a start-up Wiley had recently acquired. As a statistics content developer, the first project I worked on was a digital, interactive adaptation of the delightful simulation-based textbook *Introduction to Statistical Inference*. This project was a full-circle moment for me, as Beth Chance—one of the authors—taught the workshop my high-school teacher took back in 2003. And I had taken introductory statistics with some of the other authors!

During my time at zyBooks, I attended two ASA conferences. I presented some of my dissertation work virtually at the 2020 Symposium on Data Science and Statistics. In 2022, I was promoted to statistics content lead and attended JSM 2022 to learn as much as possible about what new and exciting approaches educators were taking in the classroom. I also attended my first section business meeting for the Statistics and Data Science



Schedler (right) with her former adviser, 2022 ASA President Katherine Ensor

Education Section, which gave me a new appreciation for how much work goes into initiatives like the *Guidelines for Assessment and Instruction in Statistics Education Report*.

When my time at zyBooks/Wiley ended, I thought back to JSM and SDSS and how part of me missed the research side of statistics. I contacted my former adviser, 2022 ASA President Katherine Ensor, and she became the driving force behind my return to research. I attended SDSS in 2023 to present our joint work with another of her students. By then, I had returned to Rice University as a research scientist for Houston Wastewater Epidemiology, a Center for Disease Control and Prevention National Wastewater Surveillance System Center of Excellence.

Although happy with my position, my fiancé was looking for a job in the fall of 2023, so I decided to make strategic applications to tenure-track faculty positions. I contacted Chance for a recommendation letter regarding our collaboration while I was at zyBooks. She encouraged me to apply for the tenure-track assistant professor position at Cal Poly, which I recently accepted.

I am so grateful for the ASA members who have helped me personalize and focus my goals as a statistician and facilitated many satisfying full-circle moments in my career. I plan to do the same for my future students at Cal Poly, as well as encourage them to get involved in the ASA much sooner than I did. ■

2024 ELECTION

Board of Directors Candidate Statements

Running for President-Elect 2025



Denise Lievesley

Retired

The impact of my first JSM remains clear in my memory. I listened in awe to incredible statisticians who engaged me in discussions about developments in survey sampling and data quality. Since then, professional statistical associations have enabled me to grow as a statistician, explore different areas of application and theory, and contribute to the profession through voluntary work. I've made great friendships along the way.

I have been privileged to serve as president of both the International Statistical Institute and the Royal Statistical Society. It is an overwhelming honor to be a candidate for president of ASA. Being an ASA member has been rewarding, particularly when I represented international members on the ASA Board.

There are at least four ways I'd like to contribute to ASA as its president:

International

Leading a refresh of ASA's international strategy and priorities, seeking an understanding of why statisticians and data scientists outside the USA belong to ASA, examining how ASA could enhance its role in the development of sound

statistical work worldwide and better support statisticians in poor countries.

Trust

Reviewing how ASA champions trust in statistics, creating stronger links with responsible journalists and fact-checking organizations. Perhaps ASA can bring together statisticians from various fields to show us how we can protect the trustworthiness of our work.

Ethics

We have a responsibility to ensure data are used ethically and that we protect privacy. I want to support the work of the Committee on Professional Ethics to further develop training material to spread awareness of ethical issues arising in our profession.

Publications

ASA should continue [to] review its portfolio of publications and take advantage of new technologies in sharing timely and quality information.

I am fortunate to have entered such an important profession and to have had so much fun in my career. Being ASA president would be icing on the cake. ■

The ASA announces the candidates for the 2024 election. Voting begins **April 1** and runs through **April 30**. Make sure to check your email for a link to the online voting system.

Running for President-Elect 2025

Jeri Mulrow

Westat



It is truly an honor to be nominated for ASA president. Founded in 1839, ASA is an international organization with members worldwide. I joined as a graduate student in the early 1980s. The ASA has provided me with many growth and learning opportunities over the years. As ASA president, I will work to continue to pay forward so other statisticians and data scientists will have their own opportunities to advance their technical knowledge, communication and collaboration skills, and leadership experiences.

ASA faces an evolving and challenging environment. We must continue to communicate the value of statistics and data science to our broader societies. We must advocate for equitable and representative data to make decisions. We must support statistical and data science literacy at all ages. We must support our current and future members. We must be both strategic and pragmatic as we move into the future.

It is always an exciting and very interesting time to be an ASA member. As with past eras, the ASA is facing new challenges to our membership, our conferences, and our fiscal well-being. But our world societies need sound statistical and data science advice, knowledge, and applications. The ASA is best positioned to promote and support these activities worldwide. It would be a great honor to serve ASA and to support strategic initiatives in statistics and data science to meet these challenges.

If elected, I will work to support activities that engage our next generations and inspire them to be advocates and principled practitioners of statistics and data science. To me, this means supporting statistical and data science literacy at all levels of education and adult learning and communicating our value to governments and individuals globally. I am proud to be an ASA member, and I hope to instill that in others. ■

BOARD OF DIRECTORS CANDIDATES

Running for Vice President 2025–2027

DuBois Bowman

University of Michigan



I'm excited to be a candidate for ASA vice president as we continue to shape the future of the statistical sciences.

I look forward to working with colleagues and peers across the ASA as we position our field as a changemaker and influencer across a range of disciplines and key issues.

This is an exciting moment for statisticians to lead on some of our most pressing issues in society, including climate change, combating misinformation, and more. We are at a moment when there is unprecedented generation, storage, and access to data along with rapidly evolving technologies, including AI. We are experiencing an accompanying rapid emergence and evolution of analytic methods and activity across numerous disciplines. The confluence of these factors creates an important moment for statistics to lead.

There is an enormous opportunity for statisticians to marshal the work across quantitative fields to push the boundaries of theories and methods that meet today's data needs and to play central roles in collaborative teams to apply such methods.

I thrive in this nexus of partnership and team science, and my experience working in collaborative interdisciplinary environments will translate to the type of collegial leadership I hope to bring to ASA as vice president. Additionally, my time as president of ENAR (of the International Biometric Society), leadership on key task forces for the Association of Schools and Programs of Public Health, and numerous efforts within the ASA make me well positioned to hold the role of ASA vice president. I hope I have the honor of serving the organization and its membership in this capacity. ■

BOARD OF DIRECTORS CANDIDATES

Running for Vice President 2025–2027



Nandita Mitra

University of Pennsylvania

Would you be surprised if I told you that I was born and raised in a small town in the Colorado Rockies among cattle ranchers and former uranium miners? How about if I told you that I helped brand a calf when I was in third grade or that the nearest big box store was four hours and an icy mountain pass away? Or that, in that same small town, residents held a film festival in which all of Ingmar Bergman's films were featured? As members of the ASA, you probably would not be surprised since we all bring something unique to our community which makes the ASA so special. The ASA brings together researchers who are inspired and motivated by the depth and nuance of data.

We seek to uncover hidden gems, think deeply about heterogeneity, and appreciate the complexity and richness of the world around us. I am proud to be a member of this association and am honored to be nominated to run for vice president of the ASA.

If elected vice president, I will collaborate closely with the president to focus on their proposed initiatives. I will bring my experiences in other leadership roles such as chair of the Statistics in Epidemiology Section of the ASA, chair of the Budget & Finance Committee of IBS [International Biometric Society], secretary of the Society for Causal Inference, and ENAR [Eastern North American Region of the International Biometric Society] representative to the ASA to this new role with full dedication, enthusiasm, and energy. Most importantly, I would strive to encourage, support, and celebrate ASA members having an impact in the advancement of innovative statistical methods, making important scientific discoveries, improving human health, leading policy decision-making, mentoring the new generation of statisticians, and developing teaching innovations. I look forward to working with you in this capacity! ■

Running for Council of Chapters Representative 2025–2027



David Corliss

Grafham Analytics

ASA chapters have such an incredible ability to apply and promote statistical science at the community level, where members live and work every day. I am seeking to serve on the Board of Directors as the Council of Chapters (CoC) representative to promote the good work being done at the chapter level and to serve as a bridge between chapters and the national organization to empower, encourage, and promote the work of the chapters in the life of the ASA. My leadership as a chapter officer, including the CoC representative for the Detroit Chapter; my monthly *Amstat News* column, Stats4Good; and ASA leadership roles in recent years as chair of the Conference on Statistical Practice and COPSS [Committee of Presidents of Statistical Societies] representative; work with JEDI; and serving on the committee for the Statistics Section of the American Association for the Advancement of Science provides the background needed for this important role.

The CoC representative serves as the board's line of sight into chapter needs, accomplishments, and as a vehicle for chapter input into ASA programs, decisions, and resources. Top priorities will be:

- Connecting members to ASA resources and supporting healthy chapters through recruiting and community outreach.
- Outreach and development in industry and government sectors that are such an important part of many chapters and offer rich opportunities for growth.
- Foster ASA partnership with other statistical societies and science organizations like American Association for the Advancement of Science and the Union of Concerned Scientists to promote the role of statistics and data science in society to build stronger communities and [a] better world. ■



Jessica Kohlschmidt

The Ohio State University, Nationwide Center for Advanced Customer Insights

I am honored to accept the nomination to serve on the ASA Board of Directors (BOD) as a Council of Chapters (COC) representative. Volunteering is a passion of mine, and I find great joy in supporting and connecting with individuals.

My commitment to ASA is evident in my efforts to revive and lead my local chapter, now serving as vice chair of District 3. I take pride in uniting individuals, fostering networking opportunities, and facilitating collective learning and growth. Providing guidance and assistance to chapters as they collaborate and engage in outreach activities has been a source of immense fulfillment for me.

A particular focus of my dedication lies in encouraging young minds to explore statistics. I have actively participated in outreach initiatives such as the Florence Nightingale Day event initiated by ASA and the Caucus for Women in Statistics (CWS) in 2018. This event celebrates women in statistics and data science while introducing hands-on statistical activities

to young participants, aiming to promote statistical literacy and interest among them. We hope to expose young individuals to the myriad opportunities within our field.

In collaboration with Tomi Mori and members of ASA, CWS, and the Portuguese Statistical Society, I have played a key role in launching the International Day for Women in Statistics and Data Science. This global platform allows individuals to showcase their work to an international audience, fostering cross-cultural learning and promoting statistical practice, as well as leadership, for those involved in planning. We are planning for the third conference in 2024.

As a board representative, I hope to create a bridge for communication between the chapters, the COCGB, and the ASA BOD. I would like to continue to support chapters in their efforts. I am excited about contributing to the ASA BOD, leveraging my experience and passion to strengthen the ASA community and advance the field of statistics. ■

Running for Council of Sections Representative 2025–2027



Shuo Chen

University of Maryland School of Medicine

In today's data-centered world, statistics and data science profoundly impact every facet of our lives, encompassing education, health care, e-commerce, and entertainment. Now more than ever, the ASA stands as the professional home for thousands of statisticians and data scientists, underscoring its significance in our rapidly evolving digital landscape.

The ASA's strength is rooted in its members. Being an active member in several ASA sections—including imaging, biometrics, and mental health, to name a few—I consistently engage in a variety of activities sponsored by these sections, such as webinars and conferences. These engagements have been instrumental to my professional development. I am committed

to sharing these experiences with the new generation of statisticians and data scientists, both in person and through media channels, to assist them in finding the sections that best align with their interests and needs. Through various channels, we aim to enhance the visibility of ASA sections and attract a diverse and inclusive group of new members. I will further advocate for enhanced communication and collaboration among the sections for challenging and important topics like modern AI research and brain science. I am enthusiastic to contribute efforts toward our professional community. Thank you for considering me to serve as the Council of Sections (COS) representative to the ASA Board of Directors. ■



Sharina Person

University of Massachusetts Medical School

I am a PhD-trained biostatistician with 25 years of experience. My research interests include randomized controlled trials, coordinating center operations and methods, quality assurance, and statistical modeling, particularly in large-scale collaborative research studies. Additionally, I am interested in the areas of health equity and diversity, equity, and inclusion. I am a co-developer and the director of the Diversity Engagement Survey, a reliable and valid instrument for assessment, evaluation, and external benchmarking of institutional engagement and inclusion, which has been implemented nationally and internationally. I have a strong commitment to training and mentoring of learners of all levels. Throughout my career, I have had the privilege of leading 24 statistics courses

(eight unique courses with multiple administrations) reaching over 500 students. Additionally, I have mentored 52 students to receive doctorate-level degrees and 11 master's-level degrees. I have also informally mentored seven junior faculty and served on the teaching faculty of several training grants, including an intensive capacity-building project for new investigators in Brazil.

Serving in the ASA has allowed me the opportunity to connect with other statistical professionals nationally and internationally and further hone my skills. It has also afforded me the opportunity to help elevate the perception of statistics both locally and nationally. I would welcome the opportunity to continue to serve this organization. ■

View the list of section officer candidates at <https://magazine.amstat.org>.

NSF Q&A: Statistics and the Division of Environmental Biology

To strengthen the connection between the statistical community and National Science Foundation, we continue the series introduced in the May 2023 issue that poses questions to NSF program officers and awardees. If you have questions or comments for the program officers, send them to ASA Director of Science Policy Steve Pierson at pierson@amstat.org.

Program Director



Samuel Scheiner has worked at the National Science Foundation since 1998 and currently manages three Division of Environmental Biology programs: Evolutionary Processes Cluster; Ecology and Evolution of Infectious Diseases; and Biology Integration Institutes. Previously, he was an associate professor at Arizona

State University West, assistant and associate professor at Northern Illinois University, and adjunct faculty at the University of Arizona. He earned his BA, MS, and PhD from The University of Chicago and is a fellow of the American Association for the Advancement of Science.

What is the Division of Environmental Biology?

DEB supports research and training on evolutionary and ecological processes acting at the level of populations, species, communities, ecosystems, macrosystems, and biogeographic extents. It encourages research that elucidates fundamental principles identifying and explaining the unity and diversity of life and its interactions with the environment over space and time. Research may incorporate field, laboratory, or collection-based approaches; observational or manipulative studies; synthesis activities; phylogenetic discovery projects; or theoretical approaches involving analytical, statistical, or computational modeling.

The division consists of four core programs: Ecosystem Science; Evolutionary Processes; Population and Community Ecology; and Systematics and Biodiversity Science. It also encourages interdisciplinary proposals that cross conceptual boundaries and integrate over levels of biological organization or across multiple spatial and temporal scales.

Does a statistician need to collaborate with a DEB scientist to be considered by the program?

No, a collaboration is not required as long as the project advances a question in ecology and evolutionary biology or develops methods for use by those communities. That said, DEB welcomes proposals that involve collaborations between statisticians and DEB researchers.

Does a proposal to the program need to include applications?

Technically no, a proposal does not need to include specific applications. At a minimum, however, a proposal should demonstrate the value of the proposed methods for the DEB community. And proposals that include applications with real-world data in areas supported by DEB are most welcome.

What are the differences between the programs in DEB and the statistics program in the Division of Mathematical Sciences?

If we think of statistical research on a continuum from basic to applied, one could characterize the statistics program as more on the basic end and the programs in DEB as more on the applied end. DEB-supported projects would be considered basic from the perspective of ecology and evolutionary biology, but not perhaps from the perspective of the statistics program. That said, there is some overlap in the missions of the programs. Because of that, the programs in DEB and the statistics program have a long history of co-review.

Is there anything else we should know about the DEB program?

Besides the core programs listed above, DEB has several special solicitations that focus on specific topics. You can find more information at <https://bit.ly/3SKHBHR>.

The NSF funded an initiative led by Ali Rahnavard and Keith Crandall to study SARS-CoV-2's evolution. Awarded \$1.8 million, they aim to create a computational platform to examine virus-host interactions over five years, affecting humans, animals, and plants. The focus is on understanding treatment-driven viral changes and identifying -omic markers linked to health outcomes and viral traits.

What will the proposal accomplish?

The proposal sponsored by the NSF Ecology and Evolution of Infectious Disease program aims to gain a deeper understanding of the SARS-CoV-2 virus mutations across different regions and time and characterize the human body's immediate and sustained responses to infection and treatments, including vaccination.

An essential aspect of the proposal is to equip researchers and students in the public health domain with the skills to use new technologies and methodologies, enhancing their ability to address pandemics and infectious diseases effectively.

The broader effects include creating mentorship and educational initiatives, hosting workshops to share research methods, and training students and researchers in new technologies to combat pandemics.

Additionally, we integrate missing components in bioinformatics into existing courses, especially in the biological and statistical curricula. Sustainability is enhanced through open-source tools and educational materials, with a focus on including undergraduate and minority students in research and validation of methods.

What advice do you have for others applying for NSF funding?

When applying for NSF funding, it is essential to craft a proposal that aligns with the NSF's goals, directly addressing the priorities outlined in the request for funding announcement. Your proposal must be responsive and clearly articulate how it fulfills specific requirements and aligns with the NSF's mission.

Assemble a multidisciplinary team whose expertise complements the project. Underscore each member's unique contributions and demonstrate how their collaboration will ensure success.

Innovation should be at the forefront of your proposal. Introduce novel research approaches that promise significant advances in your field and support these with evidence of feasibility through preliminary data or proof-of-concept results.

Additionally, your proposal should detail how the research outcomes will affect society and demonstrate a clear plan for applying results to

Awardees



Ali Rahnavard is an assistant professor of biostatistics and bioinformatics at The George Washington University. He is interested in the intersection of the microbiome and metabolome for understanding their interactions in health and disease. His lab uses systems biology-based approaches, applying computational methods to multi-omic data with the goal of generating hypotheses of the underlying processes involved in disease activity.



Keith Crandall, founding director of The George Washington University Computational Biology Institute, is a highly cited researcher and Fulbright Scholar with extensive publications, including *The Evolution of HIV*. His work spans infectious diseases to biogeography, earning him recognition as an American Association for the Advancement of Science fellow.

community and societal needs, such as promoting diversity in the workforce and considering minority groups. This focus on broader impacts can greatly enhance the relevance and appeal of your research proposal to the NSF. ■



Social Science Advocacy Day Returns to DC

The Consortium of Social Science Associations Social Science Advocacy Day is April 8–9 in Washington, DC. The event brings together social and behavioral scientists and science advocates from across the country to engage with policymakers.

Participants are teamed with advocates for a day of in-person meetings with House and Senate representatives on Capitol Hill to discuss why federal government support for social and behavioral science research is critical. All the resources needed for successful meetings, including a preparatory seminar, are provided, and all meetings are scheduled in advance.

To learn more about Social Science Advocacy Day and register to participate, visit <https://cossa.org/event/2024-social-science-advocacy-day>.

Getting to Know Col. Nicholas Clark of West Point

In keeping with our tradition of interviewing leaders from the federal government, we spoke with a West Point professor, Col. Nicholas Clark, who specializes in teaching statistics to military personnel.



Col. Nicholas Clark is an associate professor in the department of mathematical sciences at West Point. He is the former director of the Center for Data Analysis and Statistics at West Point and was instrumental in creating its applied statistics and data science major. In 2021, he created the 10-hour Data Literacy 101 course that served as the foundation for the current data literacy training in the Army.

Applied Statistics and Data Sciences Major

One of the most important mandates for West Point is to remain on the leading edge of academic program content and classroom pedagogy. In 2018, Col. Krista Watts asked if I thought the time was right for us to create a new major. We weren't sure if it would be a major in applied statistics or in what was emerging as a distinct academic discipline in data science. Our internal market research determined cadets were interested in both.

We thought statistical modeling was one of our program's strengths. We wanted to retain that flavor in our new major, so we split the difference and called the major applied statistics and data science. By including statistics in the title, it became easy to differentiate our efforts from other programs housed in computer science departments that are more computationally focused.

We have graduated two classes of applied statistics and data science majors, and we typically get about 20 cadets in each class who select it for their major.

What was the impetus for these efforts?

While we consider multiple constituencies when we build our academic program, the mission and identity of West Point

Tell us about the efforts you lead to promote and provide data literacy skills within the Army.

In 2021, I took a year-long sabbatical from West Point to work in an Army operational unit. I noticed a chief impediment to implementing data science solutions was a lack of basic data and statistical literacy skills.

To address this, we created a 10-hour course called Data Literacy 101 to teach foundational skills. After giving the course a few times, I started getting more requests from other units for the training. We realized it wasn't sustainable for us to keep giving the course in person, so we attempted to put together a course teaching others to give the training.

We ran our first instance of the train-the-trainer course in

June of 2023. Nearly 100 soldiers and civilians throughout the Army attended the 40-hour course, and we will have another iteration this spring.

Center for Data Analysis and Statistics

The Center for Data Analysis and Statistics has existed since the early 2000s and initially focused on providing statistical resources for faculty and cadets at West Point and local community members. In 2018, we decided to expand the center and focus on the needs of Army clients outside the academy. Through these efforts, we have built several pipelines to Army organizations and now receive dozens of research requests annually that we give to faculty and cadets to work on.

is clear. We “educate, train, and inspire the Corps of Cadets so that each graduate is a commissioned leader of character committed to the values of Duty, Honor, Country and prepared for a career of professional excellence and service to the Nation as an officer in the United States Army.”

This gives us clear direction when we consider new initiatives. Are we contributing to the mission, or aren’t we? When we looked at our applied statistics and data science major, it was clear the Army needed more officers to lead a data-driven force. This came to us through our internal market research and anecdotally from senior leaders in the Army.

Share a specific example or two in which your work or that of the center has informed an Army decision or policy.

Probably the most straightforward example of this was during COVID. In March of 2020, I was taken out of the department, put on our superintendent staff, and asked to build out statistical models for the spread of COVID-19 and analyze the risk of bringing back the corps after spring break. We ended up building out a parametric model for the reproductive number of the virus and were able to quantify the risk (and uncertainty) that led to the decision to delay the return of the corps.

Why is it important for the Army to have a data-literate workforce?

As the number of sensors on the battlefield has increased, the amount of raw data an individual in the Army is exposed to has drastically increased. Gone are the days when we could just take all our data and push it to a small number of individuals to analyze. Rather, we need to quickly process

the data, make decisions, and—more importantly—know what we don’t know.

How does your work fit in with US Army priorities?

Secretary Christine Wormuth, in her 2022 message to the force, directly stated her number two objective is “to ensure the Army becomes more data-centric and can conduct operations in contested environments, which will enable our ability to prevail on the future battlefield.”

It’s clear to us that, to meet this objective, we need a workforce that is data literate and officers who can effectively lead and manage data scientists and statisticians in our force.

How has the Army’s relationship with data and data-driven decision-making evolved since you graduated, and how do you envision it evolving in the future?

I was a West Point graduate in 2002 and branched into military intelligence. I like to say I majored in math at West Point because I didn’t know what I wanted to do with my life. Perhaps that isn’t far from the truth.

However, in 2004, I found myself going to the Middle East for the first time and I was handed a spreadsheet with the number of IED [improvised explosive device] attacks over time. Not knowing what else to do, I relied on the two statistics classes I was ‘forced’ to take as part of my math degree and built out a regression model that showed the command there was a pattern to the attacks.

I began to see that, even back then, there was a ton of data we were not effectively leveraging to inform decisions. I decided that if I ever got the chance to go back to grad school, I would major in statistics, which I was able to do.

I think we are still addressing not knowing how to effectively leverage data. The issue is rarely a lack of data. Rather, it is not knowing what we want to answer from data and a lack of independent data.

Tell us about your journey to becoming a colonel in the Army and being a West Point professor helping the Army-wide data literacy efforts.

West Point is unique in several ways, but our faculty model is a blend of military officers and civilians. Our military officers are typically selected earlier in their career, and we then send them to get a master’s degree before having them serve as an instructor for two to three years. Then, they can apply to be a senior faculty member and we will send them back to the force for two to three years, and then to a PhD program. These individuals again serve for two to three years in the department and return to the force. Beyond that, there are academy professors (which I currently am) who are tenure-equivalent faculty members and permanently stationed at the academy.

Just as other schools expect their tenured faculty to contribute beyond teaching, we expect the same of our senior officers. Working with the Army on their data literacy effort, for me, is an incredible way I can contribute across the service domain. Not only does it provide an important contribution to our primary constituent, but it also shows Army officers at West Point are doing more than teaching in the classroom. We are directly contributing to meeting the needs of the force. ■

Editor’s Note: The views expressed in this interview are those of Col. Nicholas Clark and do not necessarily reflect the position of the United States Military Academy, Department of the Army, or Department of Defense.

MORE ONLINE
Read the complete interview with Col. Nicholas Clark at <https://magazine.amstat.org>.

If Not You, Then Who?

Amanda Malloy, ASA Director of Development

Recently, I came across an article that touched on the psychological phenomenon of “diffusion of responsibility,” in which individuals are less likely to act when in the presence of a large group of people. The theory is that, in a situation that calls for some action to be taken when many people are present, individuals may assume someone else will take the needed action and diffuse—or pass along—the responsibility to another person.

As I write this article about the many members who donated to the American Statistical Association last year and report our fundraising total, it is clear to me the ASA is made up of people who take action for the future and do not leave the responsibility to others.

As an ASA member, you are part of a community of action takers that has been around since 1839 to promote the practice and profession of statistics—a mission only growing in importance. You volunteer, you attend

A SPECIAL THANK YOU

Nan Laird, who was honored with the International Prize in Statistics in 2021, donated her prize money to kickstart the new Telling Our Stories project that will premiere this spring. The annual stewardship report, coming out next month, will include specific examples of the programs and individuals affected by her action.

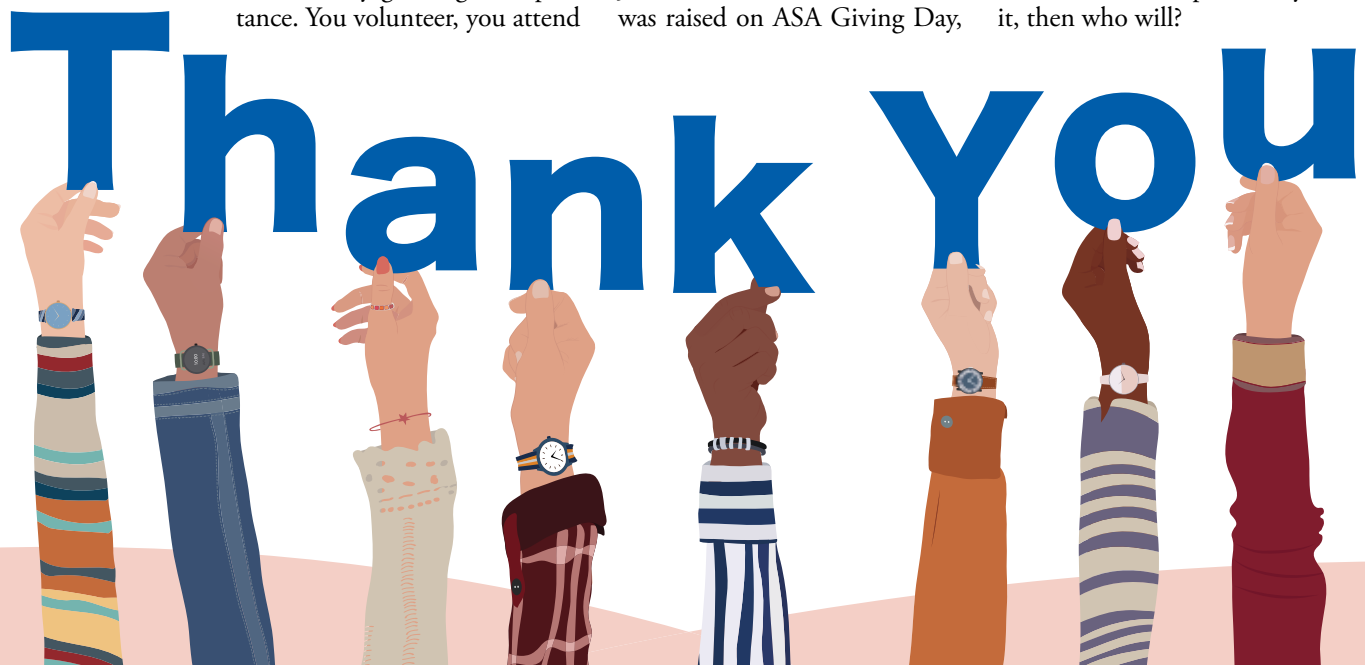


chapter and section events, you invest in your professional development and that of others, and you find ways to give back and encourage the next generation of action takers. And 742 of you donated in 2023.

Thank you to each one of you. Every donation, big or small, shows you are taking responsibility and making a difference. In total, approximately \$354,000 was raised from corporate and individual donors. Just more than \$95,000 of that was raised on ASA Giving Day,

including \$5,000 in matching funds from an anonymous J&J statistician and \$25,000 in matching funds from the family and friends of Tom Short.

Your membership, volunteer time, and donations are instrumental in bringing us closer to our vision of a world that relies on data and statistical thinking to drive discovery and inform decisions. As statisticians and data scientists, you understand the critical nature of this vision. If we don't take responsibility for it, then who will?



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ASA GivesBack: **Stories of Giving Back**



Arinjita Bhattacharyya



Jamie Joseph



Colleen McKendry (back row 4th from left) and members of the JMP Statistical Development Team

Inspired by the holidays—the season of giving—the ASA GivesBack group chose to focus their first project of 2024 on the generosity of ASA members. Throughout December and January, the group asked members to share their stories of volunteerism and giving back to their communities. Following is a selection of the stories submitted from ASA members about how they chose to give back.

Arinjita Bhattacharyya is an associate principal scientist at Merck & Co. She volunteers for activities such as chairing committees, organizing sessions at conferences such as the Joint Statistical Meetings, judging competitions for the ASA, serving as a journal editor, and mentoring. She is a member of a nonprofit organization in Pennsylvania called Pragati, where she volunteers to organize charity events, writes for the magazine, and participates in dance and cultural activities to uphold Indian culture and heritage.

Mentoring and serving professionally comes naturally to Bhattacharyya, as she has benefitted from several mentors who gave their valuable time and energy to help her get to where she is now. She plans to continue these activities to support future students and professionals.

Jamie Joseph is a PhD candidate in the Vanderbilt University Department of Biostatistics who

spends her free time volunteering as a disaster action team caseworker with the American Red Cross. As a caseworker, she assists people who have lost their homes due to fires or natural disasters by disbursing financial assistance, finding referrals and resources for specific needs, and assisting with recovery however possible.

Joseph loves Nashville but recognizes housing is a huge issue there. One way she has become familiar with resources and organizations that can help is by working with Hands On Nashville, which connects people who want to volunteer with open projects. She found out about the need for Red Cross caseworkers through Hands On Nashville and highly encourages anyone interested in giving back to give their website [www.hon.org] a look.

Linda Pickle is a biostatistician who has for the past three years volunteered as a mentor for the Gaithersburg Beloved Community initiative, a competitive program for low-income families that pairs students with older college graduates who can help them learn and gain confidence about the college experience.

Pickle served as a mentor for high-school juniors who would be first in their families to attend college. Linda's own experience served as motivation. "As a first-generation college student myself 50 years ago, a biostatistics professor took an interest in me as

an undergraduate and helped me prepare for grad school," said Pickle. "I am paying it forward to help other students who don't have family members who can encourage and guide them into college."

Colleen McKendry is a senior statistical writer at JMP, a statistical software company based in Cary, North Carolina. All JMP employees receive 20 hours of paid volunteer leave per year. Last December, McKendry organized a volunteer week for members of the statistical development team, who participated in a variety of volunteer activities. Off-campus events included a shift at the Food Bank of Central and Eastern North Carolina and a trail clean-up at a local park. On campus, employees colored pictures for the organization Color a Smile and wrote letters to elderly people who were nominated through the program Love for Our Elders. They also contributed to a local animal shelter's Amazon wish list. The volunteer week was well received, and McKendry plans to make it a yearly tradition.

Be on the lookout for ASA GivesBack activities this year, as the group members look forward to engaging and serving the ASA and beyond. You can learn more about ASA GivesBack on Facebook (www.facebook.com/asagivesback) and LinkedIn (www.linkedin.com/in/asa-givesback). ■

ASA GivesBack Group Members

Caroline Birdrow

Hasika Wickrama Senevirathne

Figaro L. Loresto Jr.

Xiaoxia Champon

Arinjita Bhattacharyya

Colleen McKendry

In Memoriam: 1992 ASA President Katherine Wallman

The ASA lost a great friend and leader January 17 when Katherine Wallman passed away. Her positions as chief statistician of the United States from 1992 to 2017 and 1992 ASA president only begin to capture her legacy as a leader, friend, and champion of government statistics and statistical literacy.

To provide *Amstat News* readers a view into this remarkable statistician's legacy, we asked her friends and colleagues to write about some of her many accomplishments.



Constance Citro

Senior Scholar, Committee on National Statistics

Katherine Wallman, as chief statistician, played a vital role in providing the nation with a better measure of poverty.

The US poverty measure was out of date almost as soon as it was officially adopted in 1969. Following a congressionally mandated 1995 Committee on National Statistics report, *Measuring Poverty: A New Approach*, Katherine worked tirelessly to give the report's recommendations a hearing.

She arranged funding for the US Census Bureau and Bureau of Labor Statistics to "kick the tires" and experiment with implementing key recommendations such as adjusting the poverty line for geographic differences in housing costs. But no one could muster the political will to adopt a particular revised measure.

Finally, in 2009, Katherine co-led an interagency group that developed guidance for the Census Bureau and BLS to develop a supplemental poverty measure. At the time, Katherine was in rehab following a stroke but continued to lead the group's deliberations, making full use of her extraordinary skill of bringing people together.

The COVID-19 pandemic saw her work vindicated—the media featured the supplemental poverty measure, which showed how expanded tax credits (not counted by the official measure) dramatically reduced child poverty.

James J. Cochran

Professor of Applied Statistics and the Mike and Kathy Mouron Chair, University of Alabama

In addition to being a stalwart public servant as the chief statistician of the United States for 25 years, Katherine was an enthusiastic supporter of efforts to increase statistical capacity and the public's understanding of statistics throughout the world. She spoke often about the importance of statistics education and outreach, not only to improve the public's understanding of statistics but to also improve critical thinking skills so society would not be susceptible to manipulation by dishonest leaders.

During her term as president of the ASA in 1992, Katherine was extremely supportive of the Section on Statistics Education and its efforts to establish the ASA's *Journal of Statistics Education*. She presciently appreciated the ASA's critical role in promoting effective statistics education and the important role the journal (now *Journal of Statistics and Data Science Education*) would play.

Katherine was also enthusiastic about the establishment of Statistics Without Borders in 2009, again foreseeing the role the new organization would play in establishing relationships among statistics communities across cultures and building important statistics capacity in countries with limited resources.

Finally, it seemed every time I saw Katherine at the Joint Statistical Meetings, she was surrounded by young (and not so young) statisticians who



Katherine meets up with friends at the 2002 Joint Statistical Meetings in New York City. From left: Katherine Wallman, Margaret Martin, Mary Grace Kovar, and Virginia DeWolf

were employed by the US federal government. She always listened to what they had to say, offered wise counsel when appropriate, and often sprinkled the conversation with her unique brand of humor.

Brian Harris-Kojetin

Senior Scholar, Committee on National Statistics

Katherine Wallman said in her 1992 ASA president's address that a fundamental challenge for the national statistical system was protecting the confidentiality of data and providing greater access to those data for statistical purposes. One of her signature accomplishments as chief statistician was achieving strong statutory protection for the confidentiality of statistical data through the Confidential Information Protection and Statistical Efficiency Act of 2002, which was later recodified and expanded in the Foundations for Evidence-Based Policymaking Act of 2018. Many readers may not realize that prior to the 2002 act, there was an uneven patchwork of confidentiality protections, even across the principal statistical agencies.

Over a period of decades, there were multiple commissions and National Academies studies that recommended strong legal protections for the confidentiality of statistical information and some limited sharing of data for statistical purposes. Katherine effectively worked within and across multiple administrations and with champions on the Hill over many years to finally get some of these key provisions enacted into law.

Katherine often referred to our community as the "federal statistical family." To me, she was the matriarch of this extended family for many years. I sat one office away from her at the Office of Management and Budget for 14 years, and I was incredibly fortunate to work with and learn so much from her.



Katherine with Vince Barabba and Janet Norwood at the 1989 closing banquet during the sesquicentennial celebration at the Joint Statistical Meetings in Washington, DC

Watching Katherine in action was a master class in dealing with all kinds of people while demonstrating personal and professional integrity. Her courtesy and open manner of sharing information—involving stakeholders, genuinely listening to people, and developing consensus among parties with differing viewpoints—was amazing to witness.

Katherine's counsel was widely sought after, and she always made time to talk to summer interns as well as agency heads, whether it was about work or a personal issue. People didn't always like what she had to tell them, but they truly respected her fairness and openness.

She had great respect and trust in staff, and she was always quick to acknowledge staff at the Office of Management and Budget and the statistical agencies and make sure they got recognition for their work. She was an incredible mentor and dear friend to me and many, many others. She is greatly missed.

Hermann Habermann

Associate Consultant, Oxford Policy Management

Soon after I was appointed chief statistician in 1987, it was clear I needed to meet Katherine. I discovered she had been operating as the unofficial chief statistician while she was head of the Council of Professional Associations on Federal Statistics. Katherine was the person you approached to find out what was going on in the federal statistical system, and she seemed to know everyone. It was the beginning of a friendship—at the professional and personal levels—which lasted almost 37 years.

In 1992, I was asked to find my replacement. The decision was not difficult; it was clear to me the most suitable candidate was Katherine.

The chief statistician at the Office of Management and Budget occupies a singular position. This person must explain to the political leadership the importance of unbiased statistics. At this important and difficult task, Katherine excelled. She demonstrated a unique ability to move between the career and political spheres.

The federal statistical system is comprised of agencies that are often jealous of their prerogatives. She recognized leadership of a decentralized system is best accomplished through building relationships. Katherine fostered a federal system in which the whole was greater than the sum of its parts and recognized leadership is often best demonstrated by allowing others to take center stage. She had a superior understanding of how to navigate policy differences between agencies and how to build coalitions.

Katherine also had the skill of being able to disagree without being disagreeable and knowing how to leverage the scarce resources of her office. To not only survive, but to flourish at OMB for 25 years, is a testament to her skill, dedication, and ability to understand and resolve policy differences. She was warm, compassionate, and trustworthy, and she will be missed.

Shelly Martinez

Executive Director, US Commission on Evidence-Based Policymaking

After the crush of 1990 census oversight subsided, Rep. Tom Sawyer's subcommittee was ready to engage a broader set of statistical issues. But we didn't really know how. Katherine, executive director of the Council of Professional Associations on Federal Statistics, decided to teach us. She became a familiar and trusted presence, with no question too mundane and no request too ambitious. She helped us develop a hearing series examining demographic trends informed by census and other federal statistics. She introduced us to experts on



In 2016, Katherine was honored for her years of service as chief statistician of the US. Here she is with 2017 ASA President Barry Nussbaum.

immigration, aging ... and race and ethnicity. She helped Congress bring national attention to emerging trends and their policy implications.

When we finished race and ethnicity hearings—her timing impeccable as ever—she was back at the Office of Management and Budget as chief statistician, ready for the handoff. To this day, the Sawyer-Wallman handoff was one of the most respectful I have witnessed between two branches of government, possible because of Katherine's investment in helping Congress understand the federal statistical system and its stakeholders.

That commitment sustained her as she led the executive branch standards update of 1997 in a way that honored everyday families, who she welcomed to participate as much as statistical system researchers and practitioners at all levels of government.

Steve Pierson

Director of Science Policy, American Statistical Association

I had the great honor to know Katherine and benefit from her wisdom, guidance, and kindness. Especially after her retirement, she was generous with her time, expertise, and insights—not to mention her editing prowess and Rolodex.

After leaving government, she felt freer to express her personal views and sometimes referred to herself as “Wallman Unleashed.” The ASA memoriam touches upon her many contributions to ASA science policy as this version of herself but can't begin to capture the hundreds of emails I have from her, the scores of documents she edited and contributed to, or the hundreds of hours of phone and Zoom calls I had with her.

I will miss her greatly and strive to live up to her standards, recall her wisdom and knowledge, and carry on her devotion to objective and timely government statistics and their integrity.

—Steve Pierson

This year marks for me the end of an era—at least for the ASA if not the federal statistical community—that extends back to at least 1983, when she was elected an ASA Fellow.

I will miss her greatly and strive to live up to her standards, recall her wisdom and knowledge, and carry on her devotion to objective and timely government statistics and their integrity.

Robert Santos

Director, US Census Bureau

I'm heartbroken. The statistical and federal communities have lost a champion to federal statistics, scientific integrity, and public service. Others can speak of her manifold accomplishments in the federal statistical policy arena. I'm here to speak to Kathy's humanity, to her passion for advancing the best science in creating official statistics.

Kathy was unique. She brought her 'whole self' to the table, as I like to say. She nurtured federal statistical integrity, objectivity, and independence with a flair that commanded attention. Maybe that's why she is one of my heroes.

I met Kathy in the early 1990s during her term as president of the American Statistical Association. She was so welcoming, even though I was a mid-career statistician who worked outside the federal statistical system. Over the years, we encountered each other occasionally, working together as advisers or on policy issues to help the statistical community.

Let me tell you, Kathy knew how to command an audience. She could effortlessly grab attention using humor and storytelling that wove



ASA Director of Science Policy Steve Pierson and Katherine during the science policy session at the 2016 Joint Statistical Meetings in Chicago, Illinois

issues into a cogent narrative. And she did it with aplomb. That's how I will always remember her.

Thank you for being our friend, Kathy. We miss you.

Jennifer Park

Study Director, Committee on National Statistics

During Katherine's tenure, the international statistical system faced perhaps the greatest challenges of the era. She met these challenges with integrity, grace, and wit.

Katherine championed the Fundamental Principles of Official Statistics, which unified official statistics across all UN-recognized countries. She also lifted the international statistical community's response in providing indicators and statistics for the UN Millenium Development Goals and its successor, the Sustainable Development Goals.

But these positions of responsibility, even during exceptional times in our history, cannot explain the respect, admiration, and friendship so many of her peers held for her. Long after her tenure, she remained a thought leader, a wise counsel, and a trusted colleague.

The secret of Katherine's magic is both simple and extraordinary. As in all our work, our efforts rest in our personal relationships with others. Katherine met people where they were. She found shared values and goals. She believed the best of everyone—and expected it of herself and others. In this belief, she found—and shared—delight, pride, strength, and courage. Katherine would not let you down. Shown that respect, one could not let her down, either. ■

MORE ONLINE

Remembrances of Katherine continued to pour in long after space ran out. Please visit <https://magazine.amstat.org> to read more about Katherine and her effect on those around her.

JEDI CORNER

Building Successful Mentor/Mentee Relationships in the Hybrid Work Era

Michael Dumelle and Therri Usher

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.

It is no secret that many institutions are embracing remote and hybrid working environments. This change has far-reaching implications, including for how statisticians and data scientists initiate and build their careers. It begs the following questions: How can those in our field support statisticians and data scientists in this new work era? How can we continue to embrace JEDI principles in our support?

To begin exploring this topic, the JEDI Outreach Group held a webinar on October 16, 2023, titled “Building Successful Mentor/Mentee Relationships in the Hybrid Work Era.” Michael Dumelle from the US Environmental Protection Agency and Therri Usher from the US Food and Drug Administration moderated the webinar featuring the following panelists:

- Brittney Bailey, Amherst College
- Eric Daza, Stats-of-1/Evidation
- Jeffrey Gonzalez, Bureau of Labor Statistics
- Megan McCabe, University of Iowa
- Kendra Plourde, Yale University
- Machell Town, US Centers for Disease Control and Prevention
- Dorcas Washington, University of Cincinnati

Panelists shared their ideas and perspectives through questions posed by the moderators and audience. They agreed mentorship in a hybrid environment should emulate in-person, informal meetings with mentees, even when there is a remote connection. Strategies to do so included setting aside time for informal and virtual lunch meetings, communicating needs and timelines clearly, and getting creative with modern communication platforms. The panelists noted Slack and Microsoft Teams as useful tools for informal

communication and quick check-ins. Mentors can also establish blocks of time on their schedule when they are available.

While having a remote connection can require special consideration, some of the same approaches for fostering inclusion in an in-person space translate to the hybrid/virtual space. Panelists emphasized the importance of building trust, recognizing and reflecting on differences in organizational power between mentor and mentee, and looking for ways to make others feel valued and respected. For example, both parties looking into the camera during the entirety of a web meeting can help build trust and respect.

Panelists also discussed how important it is for mentors to understand the varying needs of mentees and learn how to navigate them. Mentees should also understand the benefits of having different mentors for different roles, as they may want one mentor who provides general career advice and another who helps with technical skills. Moreover, it is important to identify ways in which mentor and mentee roles can evolve through time.

Traditional mentorship questions were brought to the table, as well. For instance, how do you build a mentor/mentee relationship with people who are of a different race or have a different gender identity or education? The panelists agreed the first step is to practice open communication. Building trust is important and takes time but is essential for fruitful mentor/mentee relationships. Also, mentors can advocate for their mentees by considering what types of knowledge their mentees lack exposure to and trying to provide that knowledge.

Panelists were also asked how to approach difficult conversations. One recommendation was to have these conversations in person or on a phone or video call so audio and visual cues can aid understanding. In general, having trust between both parties makes tough conversations easier. Additionally, having a plan for the structure of the conversation can be helpful.



Michael Dumelle
US Environmental
Protection Agency



Therri Usher
US Food and Drug
Administration

Webinar Moderators



Brittney Bailey
Amherst College



Eric Daza
Stats-of-1/Evidation



Jeffrey Gonzalez
Bureau of Labor Statistics

Panelists



Megan McCabe
University of Iowa



Kendra Plourde
Yale University



Machell Town
US Centers for Disease
Control and Prevention



Dorcas Washington
University of
Cincinnati

To view the webinar
recording, visit
<https://bit.ly/48rNwrm>.



Join JEDI

The JEDI Outreach Group is committed to fostering JEDI principles and mentorship in statistics and data science. Interested in joining the JEDI Outreach Group? Visit the group's website at <https://datascijedi.org> to learn more and then fill out the form at <https://datascijedi.org/get-involved> to become a member.

Panelists touched upon the importance of identifying and responding to different feedback and communication styles, as well. Panelists pointed out that some people might appreciate being involved in every step of problem-solving, while others appreciate a more hands-off approach. It is helpful to recognize and understand how others prefer to receive feedback.

Finally, panelists shared one piece of general advice about mentorship. Those takeaways are the following:

- Set expectations early on. In the first meeting, clarify mentor and mentee expectations so both start off on the same page.
- Be committed and follow through on what you say you are going to do.
- You want a broad set of mentors, not just one.
- Be specific and timely with the questions you have for your mentors.
- There are no questions too small. If something is unclear, ask questions of your mentors.
- When you start the relationship, set some goals. Have an idea of what your end goals are with the relationship.
- Be open-minded. Your mentor may suggest great new opportunities you had not previously considered. ■

Celebrating

WOMEN IN STATISTICS & DATA SCIENCE

WOMEN'S HISTORY MONTH



In honor of Women's History Month, we are once again celebrating ASA women who work in statistics and data science. These 11 accomplished women were chosen because they are leaders and mentors in their field. Read their full stories on *Amstat News* online (<https://magazine.amstat.org>) and find out why they chose statistics, who influenced them, and what they have achieved.



Mary Ellen Bock began her academic career at the University of Illinois at Urbana-Champaign, where she earned her bachelor's degree in German in 1967. She shifted her focus to mathematics for her graduate studies at the same university and earned her PhD under the guidance of Robert B. Ash. In 1995, she made history as the first female full professor of statistics and inaugural female chair of the statistics department at Purdue. Under her leadership, Purdue added courses in areas of application such as bioinformatics, genomics, massive data, machine learning, visualization, and computational finance. She was also instrumental in securing National Science Foundation funding to develop the Pathways to the Future workshops that helped young female faculty succeed. Bock is an ASA founder and fellow.

Hailing from Trinidad and Tobago, **Charmaine B. Dean's** academic journey was shaped by her mother's emphasis on getting an education, even though her mother was prevented from getting one herself. Dean's affinity for mathematics, and particularly statistics, flourished during her undergraduate years and aligned with her desire to make a tangible impact. Currently, as the vice president research international at the University of Waterloo, she provides strategic direction in research, innovation, and international collaboration. Previously, she served as the dean of science at Western University and chaired the department of statistics and actuarial science at Simon Fraser University. She considers her engagement in interdisciplinary research one of her greatest achievements, particularly her research in fire science, which has allowed her to collaborate with scientists, government agencies, and fire crews.





Maria DeYoreo developed a passion for swimming, running, and math when she was a child living in the Bay Area. While majoring in mathematics at UC Santa Barbara, she discovered her love for statistics after attending an applied course using R. On completion of her PhD, she was presented with the Savage Award for the best dissertation in Bayesian methodology. DeYoreo focuses on using statistical methods to inform public policy related to health and health care as a professional statistician at RAND. In addition to her professional success, she takes pride in her role as a parent to two young children and recently achieved a personal milestone with a 1:35 half marathon, running her personal record.

Jennifer Hill developed an early interest in math and pursued economics in college. However, after working in the corporate world, she went back to school and her love of statistics led to a master's program at Rutgers and a PhD from Harvard that focused on causal inference and social policy. She did a postdoctoral fellowship in social policy after earning her PhD and became an assistant professor in the Columbia University School of International and Public Affairs. Currently professor of applied statistics at NYU Steinhardt, Hill is creating software that makes it easier for applied researchers to use sophisticated methods in a way that helps them have a deeper understanding of them. She developed the thinkCausal app to simplify refined methods. She loves teaching but also finds it challenging. She notes, "Answering real questions with real data is the best and biggest challenge there is."



Ginger Holt's journey into the world of statistics and data science began in Fort Worth, Texas, fueled by a family passion for education. She pursued an undergraduate degree in industrial engineering at Texas A&M and then earned a PhD in statistics from Rice University. She loved her first job as assistant professor at the University of Virginia but did not love pursuing research funding, so she left for industry work. Currently at DataBricks, Holt plays a pivotal role in unifying forecasting processes across different domains. Leading her team, she focuses on building tooling in data engineering and data science, aiming to make these processes scalable—not only for DataBricks but also for its customers. Her favorite facet of a career in data science is its ability to foster new learning opportunities.

As a labor economist, **Julia Lane** is driven by practical questions such as the return to on-the-job training investments. Her interest in data and statistics led to innovative methods combining diverse data sources and addressing bias and measurement issues. Enthusiastic about public good, she co-founded programs such as the Longitudinal Employer-Household Dynamics Program, PatentsView, and the Coleridge Initiative. Her latest is a data search and discovery platform called Democratizing Data. Lane's significant contributions extend to empowering women with remote access facilities and eliminating child care barriers. Among her achievements, she takes pride in her *Nature* article, "Women Are Credited Less in Science Than Men," emphasizing the crucial role of statistics in understanding selection bias and highlighting implications for science policy.



Regina Liu grew up in Taiwan. She had an interest in pursuing applied mathematics and actuarial science but ended up falling in love with probability and statistics. She earned a PhD in statistics from Columbia University and became an assistant professor at Rutgers. Now a distinguished professor there, she has established herself as an outstanding researcher and is praised for providing exceptional service to the statistics and data science professions. She has served as an editor for many journals, including *JASA* and the *Journal of Multivariate Analysis*, and was president of the Institute of Mathematical Statistics from 2020–2021. She has dedicated much effort to the outreach and promotion of junior researchers and under-represented groups and is credited for making the Rutgers statistics department the well-known and nurturing place it is today.

While a math student at Vassar, **Deborah Nolan** was exposed to statistics during a summer internship during which she helped analyze data from a survey in a women's magazine about how family life had changed as more women became breadwinners. That experience convinced her to stay away from statistics and stick to the comfortable world of theoretical math. However, she later worked for IBM and learned how to code in several languages. It was this work as an applications programmer that brought Nolan back to the world of statistics, and she went on to earn a PhD in the field. At the University of California, Berkeley, Nolan developed a love of teaching and has been honored with multiple awards for her dedication, including the Waller Distinguished Teaching Career Award and Berkley's Distinguished Teaching Award. Currently serving as the inaugural associate dean at Berkeley, Nolan is instrumental in meeting the growing demand for data science education, with nearly 1,000 students majoring in data science graduating annually.





When **Susan Paddock** started her undergraduate degree, two pivotal courses—health care reform and women's health—introduced her to epidemiological literature and cost-benefit analysis and steered her toward majoring in math and biostatistics. She earned her PhD from Duke and joined the RAND Corporation, applying statistical methods to health policy research. Notably, she contributed to designing a Medicare payment system for inpatient rehabilitation facilities, affecting federal programs and congressional deliberations. Since 2019, Paddock has held a leadership role at NORC at the University of Chicago, overseeing a diverse team of statisticians. She was also involved in testing the safety of self-driving cars. Collaborating with Nidhi Kalra of RAND in 2016, Paddock highlighted the inadequacy of existing road tests to ensure public safety, drawing the attention of a US Senate committee. Their paper on this topic stands as her most frequently cited work, showcasing the power of statistical thinking in addressing crucial societal concerns.

Nancy Reid intended to become a computer scientist because it was rumored to be “the future.” Instead, during her undergraduate years, she discovered she enjoyed statistics. She went on to pursue an MSc at the University of British Columbia and expected to find a ‘real job’ at the end of the program. However, when she did her research thesis, she was hooked. The research environment was so exciting to her she has dedicated her entire career to academia. She has especially found joy in teaching both applied and theoretical statistics and has made an impact on students throughout her career. Reid values the influence she has had on her students the most. A few years ago, she stumbled upon a Twitter exchange among University of Toronto alumni from the ‘90s and one of them said a course she took from Reid changed her life.



Millennia Young's favorite subject was math. She loved solving problems and knowing she had the correct answer, even if the answer was “does not exist.” After high school, she went on to study applied mathematics at the New Jersey Institute of Technology and was introduced to statistics. “Although both disciplines use math to model what is happening in the world,” she wrote, “statistics provided unique insights.” Before she started her PhD, she had two children. By the time she defended it, she had three. Although she struggled, she kept going and eventually landed her dream job: leading the biostatistics lab for human health and performance at NASA. Actively involved in NASA's groundbreaking projects, Young contributed to designing the crew health and performance exploration analog and witnessed the realization of the Artemis program, set to land the first woman and person of color on the moon. ■

STATS4GOOD

Community-Based Data for Good Projects: Think Statistically, Act Locally



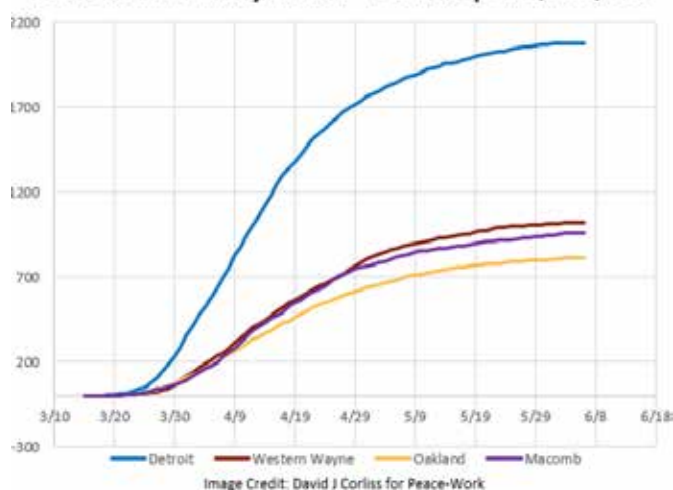
David Corliss is the principal data scientist at Grafham Analytics. He serves on the steering committee for the Conference on Statistical Practice and is the founder of Peace-Work.

With the publication in January of the 2024 Data for Good Challenge List, Stats4Good will be looking at some of the challenges in detail. Developing more local studies was identified as the top challenge in biostatistics, but it's really needed in all areas.

The best data for local studies is usually found in data maintained by local organizations such as government agencies, nonprofits, and charities. Intersectionality is important. For example, it's been my experience that the organizations with the best data and understanding of poverty on a local level are the school districts, with the population percentage of free and reduced lunch one of the most predictive demographic variables for a host of issues and concerns.

Health data starts with the county health department—and often ends there, as well—with the state and federal governments rolling up data captured by the county. Local advocacy organizations can often be found addressing issues that matter to you most. Union locals will have data on the work force, safety, and local educational challenges. Your town's major might not know how many people in your community are functionally illiterate, but a shop steward will.

Detroit Area Early Trend – Deaths per 1,000,000



Geographic time series of the early COVID pandemic in the Detroit area. The disparate impact on marginalized communities helped inform action plans by local community service organizations.

All this makes building relationships with local subject experts and data stewards an important first step in developing community-based projects. Author Stephen M. R. Covey wrote that business moves forward at the “speed of trust.” This is especially true of Data for Good, where progress is driven by trust much more than technology.

Partnering with local subject matter experts in academia, government, and industry provides access to data and key insights important for success. Working with existing local groups, many

of which will have decades of experience, can also put you in touch with a critical but often overlooked element: people who have experienced the issue you seek to address. By partnering with those already working in the area—getting to know them and volunteering for projects before adding statistics and data science—you make the most of your work in Data for Good.

For example, in the first wave of the COVID-19 pandemic—before vaccines were available and

treatment methods were in their early stages—people in many urban centers suffered. One such center was Detroit, where the local health department data revealed an important finding. While most data was reported at the county level, Detroit has its own health department and reported COVID numbers separately. The time series of deaths per capita shows the city had a far higher mortality rate than the balance of Wayne County or the two neighboring counties. This analysis, requested by local religious leader Don Kreiss, was repeated for other metropolitan areas to identify a consistent disparate impact of the first COVID wave on marginalized communities such as people of color and helped direct the response of local community service organizations.

The opportunities for local D4G studies are endless. Social service organizations are empowered to find more volunteers, optimize financial support, target areas of greatest need, and leverage data-driven decision-making to drive better outcomes. ASA chapters can play a leading role in promoting D4G projects, finding statisticians and data scientists to undertake them, and building the community partnerships so important to maximizing impact.

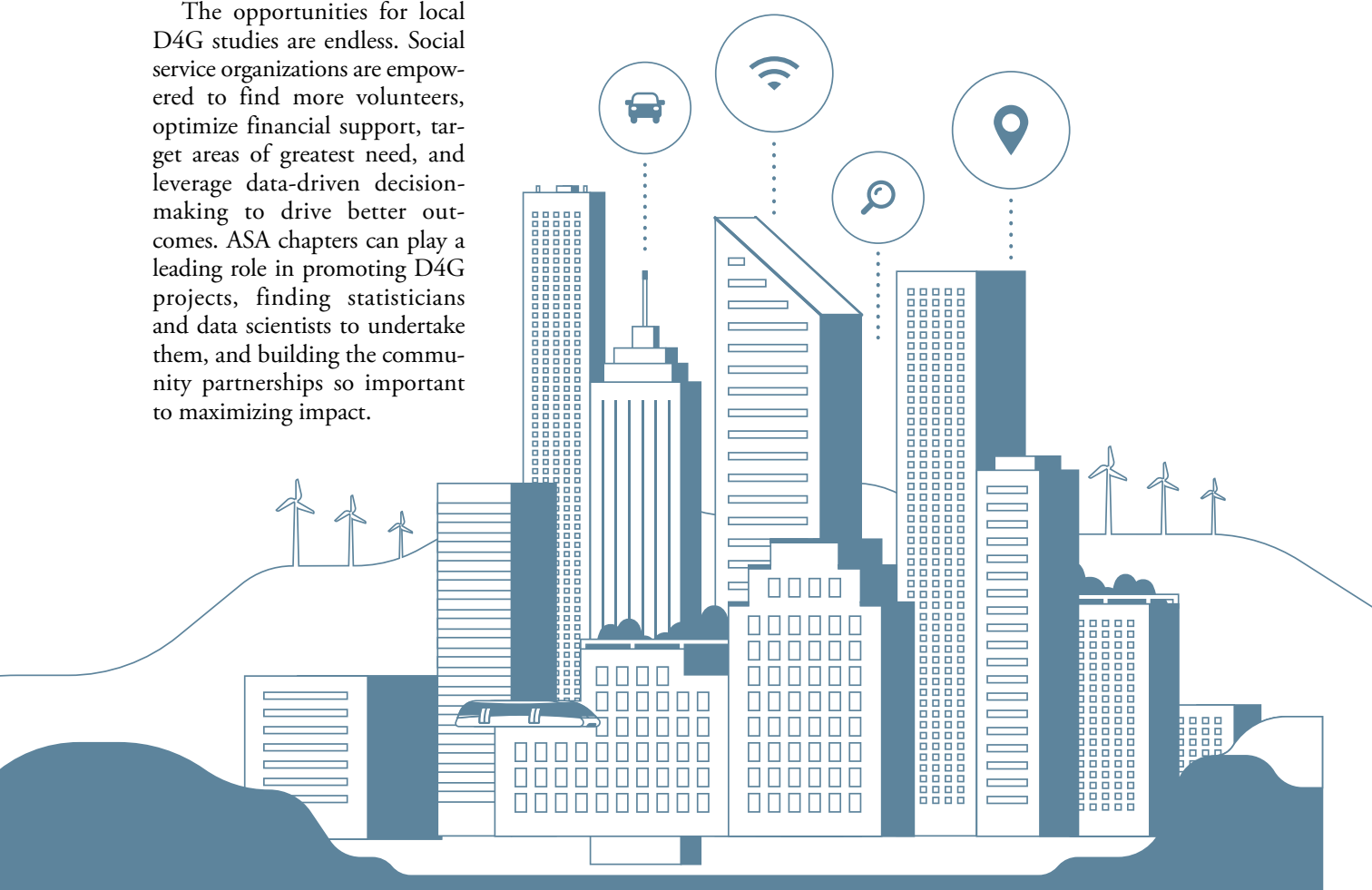
Getting Involved

In opportunities this month, submissions for the 2024 Women in Statistics and Data Science Conference are open until April 19. The conference will be in Reston, Virginia, near Washington, DC, October 16–18. Learn more at ww2.amstat.org/meetings/wds/2024.

Also, the National Institute of Justice is accepting applications for its graduate research fellowships. The program provides up to three years of support within a five-year period for doctoral students. Applications are due by April 17. Learn more at <https://bit.ly/4bG8pI5>.

Chapters can organize hackathons to address an issue of local importance. These are a win for everyone involved, with chapter members reaching out to the community, forming partnerships, building trusted

relationships, and recruiting new members eager to use statistical science to serve their communities. Thinking statistically and acting locally is a powerful strategy for Data for Good! ■





STATtr@k

Do Student Paper Competitions Really Matter?

Erik Bloomquist



Erik Bloomquist is a senior principal scientist at Merck & Company who works on bringing new oncology and hematological medicine to patients. He is also chair-elect of the ASA Biopharmaceutical Section.

It's a great time to be working as biostatisticians and data scientists in the biopharmaceutical field. In the last 10 years, breakthroughs in oncology drug development have led to unprecedented improvements in survival for cancer patients. Gene therapies based on DNA-editing technologies have achieved cures for diseases such as sickle cell anemia. Additionally, treatments developed for diabetes have the promise to combat the epidemic of obesity within the United States. In the field of diagnostics and technology, simple blood draws may soon be able

to detect cancer earlier via floating DNA in the blood, artificial intelligence holds the promise to personalized treatment for patients, and digital health technologies will soon speed up clinical development and decentralize clinical trials.

Underlying all these medical and therapeutic advances are thousands of talented and dedicated statisticians, biostatisticians, and data scientists who design studies, formulate protocols, manage data, implement statistical methodology, validate computer software, review marketing applications, and develop

new statistical methods. Much of this work occurs behind the scenes and without public fanfare but, without their dedication, advances would not occur.

Accordingly, demand for statisticians and data scientists in the biopharmaceutical field is expected to grow substantially over the next decade. In 2022, the Bureau of Labor Statistics released numbers that project a 35% growth demand for data scientists and 30% increase for statisticians over the next 10 years. Even today, there are hundreds of thousands of openings for data scientists and statisticians.

While writing this article, I did my own search for “statistician” and “data scientist” on a major job site and found nearly 6,000 openings. While the demand projections from BLS and my own search do not focus on just the biopharmaceutical realm, these numbers do point toward a flourishing market for aspiring data professionals.

There is growing awareness among students and university administrations about this trend, leading to an increased interest in pursuing degrees in these fields. In December 2023, the *Amstat News* article “Data Analytics, Data Science Degrees See Large Increases in 2022” focused on remarkable growth in the number of graduate degrees granted in statistics and biostatistics over the past 10 years. Moreover, it showed a large increase in the number of data science programs and degrees. For example, in 2022 there were 185 universities granting degrees in data science; in 2010, there were only six.

For students, graduating with a degree in statistics or data science is a great first step to gaining employment in the biopharmaceutical field. Yet students also must consider how to network and make connections to secure their desired position. Historically, summer internships have been the tried-and-true method for practical experience and a gateway to employment. By spending 8–10 weeks during the summer working alongside experienced statisticians in an industrial or government setting, students can acquire experience and maturity, often while contributing to a scientific publication—all valuable additions to their résumés.



Attendees network at the student mixer during the Joint Statistical Meetings last year in Toronto, Canada.

However, with the rising numbers of students, degree programs, and demand, is a degree and internship still enough to make you stand out? Students can also participate in student paper and poster competitions held by statistical and data science conferences each year. They offer a financial prize or travel support but, more importantly, they offer unparalleled exposure to professional statisticians.

For example, the ASA Biopharmaceutical Section student paper competition for the 2024 Joint Statistical Meetings received a record 42 entries and was able to offer a \$2,000 top prize, eight total prizes, a chance to speak during a JSM session, and exposure through its newsletter. Not bad for submitting a paper many students are already writing as part of their graduate work.

Another example is the poster competition for the 2023 ASA Biopharmaceutical Section Regulatory-Industry Statistics Workshop held in September. This annual workshop brings together statisticians from the US Food and Drug Administration and industry to discuss practical and

methodological issues in health. It is the Biopharmaceutical Section’s signature event, with attendance growing every year. The 2023 workshop had 1,170 attendees, making it one of the largest statistical gatherings in North America.

Liwen Wu, a recent PhD graduate from the University of Pittsburgh working at Takeda, and Peng (Jason) Yang, who is wrapping up his PhD at Rice University, submitted winning entries. Their posters were related to the work in my area of oncology. Impressed, I extended invitations for them to join two accepted 2024 JSM sessions I am involved in. Had they not entered the competition, this opportunity would not have occurred.

So, to come full circle, do student paper competitions matter? Yes, but often not for the reasons we initially expect. It’s not about being the top student or receiving a nice financial reward. Instead, it’s about the chance to introduce yourself to professional applied statisticians, demonstrate your involvement in the community, and show off a little bit of your work. These have real payoff in the long term. ■

MORE ONLINE

For more information about ASA conferences, visit the ASA meetings webpage at www.amstat.org/meetings.



Registration Open for ICES VII in Glasgow, Scotland



Scan the QR code to visit the conference website.



Registration is now open for the seventh International Conference on Establishment Statistics, taking place June 17–20 in Glasgow, Scotland. This will be the first time the conference is held in the United Kingdom and only the second time it has been held outside North America.

The ICES conferences started in 1993 as an initiative to create a stronger international community focused on establishment statistics—covering statistics relating to businesses, farms, and institutions. Initially on a seven-year cycle, ICES now takes place every four years and is an opportunity to gather with international experts in establishment statistics from international statistical offices, academia, statistical associations, and private businesses. It is a chance to learn about the latest research and practice and to network with colleagues.

UK National Statistician Sir Ian Diamond will open

the conference with a keynote. Danny Pfeffermann, an academic with a career at the forefront of developing methods for official statistics, will give the second keynote, and Katherine Jenny Thompson, methodology director in the US Census Bureau Economic Statistical Methods Division, will give the final keynote.

The conference will also offer short courses presented by international experts on the following topics:

- Data privacy
- Seasonal adjustment and time series analysis
- Multiple imputation
- Data science in official statistics
- Electronic questionnaires

There will be parallel sessions covering a range of topics in establishment statistics. This includes invited and contributed

Special Events

Welcome Reception

Join new friends and old while celebrating the conference kickoff.

ICES VII Dine-Around

Sign up for one or more no-stress, built-in dinner parties and share a meal with a small group of colleagues.

ICES VII Celebration

Unwind and enjoy easy conversation. This reception is the final event, officially bringing the conference to a close.

sessions and introductory overview lectures—presentations on key topics intended for an audience with little or no experience in those areas.

The intention is for the introductory lectures to lay a foundation for related conference sessions. Topics covered will include new approaches in sampling and estimation, data science, real-time analysis, recent advances in small area estimation, data visualization, and use of big data in price statistics.

To register, visit the conference website at ww2.amstat.org/meetings/ices/2024/registration.cfm. Fees increase after April 15. For more information, visit ww2.amstat.org/meetings/ices/2024. ■

Proposals Being Accepted for Health Policy Statistics Conference



International Conference on Health Policy Statistics

Statistical Innovation to Improve Health Equity

January 6–8, 2025 • San Diego, California

The American Statistical Association and Health Policy Statistics Section are planning the 15th International Conference on Health Policy Statistics January 6–8, 2025, in San Diego, California, at the Hyatt Regency Mission Bay Spa and Marina. The theme is “Statistical Innovation to Improve Health Equity.”

ICHPS provides a forum for practitioners, health service researchers, statistical methodologists, health economists, and policy analysts to discuss research needs and solutions to methodological challenges in study design and data analysis for health policy research.

This smaller meeting provides an opportunity for connection and collaboration among researchers of all career stages working in the health policy and health services arena. Here is what past attendees have to say about the value of attending:

I've been attending ICHPS since I was a graduate student, and it remains one of my favorites given the mix of innovative statistical methods, robust discussions, and a collegial environment of people committed to making a difference in the world through statistical methods for health policy.

- **Liz Stuart** (Department of Biostatistics, Johns Hopkins Bloomberg School of Public Health)



This is the only conference I attend where I regularly hear other attendees saying, “This is my favorite conference!” It’s the perfect size and scope for networking with colleagues and learning about the active areas of health policy research.”

- **Cory Zigler** (Department of Statistics and Data Science, The University of Texas at Austin)



ICHPS is one of my favorite conferences to attend because it brings together people focused on key issues in health policy and the associated statistical challenges in appropriately addressing important policy relevant questions. Its manageable size also helps to facilitate interaction and conversation with other attendees, which is great for networking and collaboration.

- **David Kline** (Department of Biostatistics and Data Science, Wake Forest University School of Medicine)



Invited session and workshop proposals are being accepted through March 31. Submit your proposal at ww2.amstat.org/meetings/ichps/2025. ■

Scan the QR code to visit the conference website.



Peihua Qiu, ASA life member and fellow, was recently honored with the 2024 American Society for Quality Shewhart Medal. The medal is given to an individual who has demonstrated outstanding technical leadership in the modern quality control and improvement field. The citation reads as follows:

For seminal research in developing new quality control methodologies; for exploring new applications of process control charts; for leadership in promoting quality and statistics in healthcare and biomedical studies; and for outstanding editorial service to ASQ-sponsored journals.

The medal will be presented in San Diego, California, at the 2024 World Conference on Quality and Improvement. ■

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.

Three Win CSP Student Awards

The following student winners received financial support to attend the 2024 Conference on Statistical Practice:

John J. Bartko Award

Garrett B. Duncan



Duncan completed his master's program earlier this year at Brigham Young University and would like to pursue a PhD. Attending CSP 2024 will assist him in expanding his depth and breadth of knowledge on mixed models, the EM algorithm, and similar methods. Writing statistical software is another topic he would like to learn from others in attendance about, specifically revolving around reducing back-end calculations.

Lester R. Curtin Award

Xingruo (Summer) Zhang



Zhang will graduate in June with a PhD from The University of Chicago. Her immediate career goal is to secure a position as a biostatistician in either a biotechnology company or clinical research institute to leverage her statistical expertise in addressing pressing issues in the clinical development process. During CSP 2024, she will be presenting an R2 tool she developed to facilitate the interpretation of the complicated mixed-effects location scale model.

Lingzi Lu Memorial Award

Kristin K. Gaffney



Gaffney completed her master's of public health degree with a biostatistics concentration at the University of Nebraska Medical Center College of Public Health and has been working as a master's-level biostatistician for a pediatric clinical trials network focused on underserved populations. By attending CSP 2024, she hopes to grow her skills and increase her awareness of strategic methods, as well as meet new friends and future collaborators to turn data into real solutions for real people. ■

Remembering Barbara A. Bailar

Kirk Wolter

Barbara Bailar passed away June 13, 2023, at her home in Houston, Texas, where she had moved during the pandemic to be near family.

Barbara grew up in upstate New York and earned a bachelor's degree in mathematics from the State University of New York at Albany. She was trained in statistics at Virginia Tech and American University, earning a master's degree and PhD, respectively.

She spent most of her career at the US Census Bureau, where she worked from 1958 to 1987. She became associate director for statistical standards and methodology and was instrumental in establishing a computer-assisted telephone interviewing capability (a relatively new mode of data collection at the time) and survey methodology as a distinct discipline there.

Barbara sought and organized the financial resources and institutional backing necessary to develop a cognitive laboratory organizational unit within the bureau.

She defended the 1980 Decennial Census in federal court and led efforts to develop and test new methods of census taking that would reduce differential undercount in future censuses.



Barbara Bailar, 1987

Barbara founded the bureau's annual research conference in the mid-1980s, a forerunner of today's FCSM Research and Policy Conference.

She was an executive with NORC at the University of Chicago from 1995 to 2001.

Barbara conducted research on nonsampling errors in social surveys and censuses. She designed and analyzed special studies to measure the correlated component of response variance brought by interviewer effects. Her work on rotation group bias and an error profile for the Current Population Survey is well known.

Barbara was a prominent statistician. She was the 82nd president of the American Statistical Association in 1987, president of the International Association of Survey Statisticians from 1989 to 1991, and vice president of

the International Statistical Institute from 1993 to 1995. She served as executive director of the ASA for seven years in the late 1980s and early 1990s and was active in the Washington Statistical Society throughout her career. She was also a fellow of the ASA and an elected member of the International Statistical Institute.

Barbara was married to John C. Bailar III (deceased), a prominent biomedical statistician who was founding chair of The University of Chicago Department of Public Health Sciences. She is survived by two daughters, Pamela Monaco (Ocean County College) and Melissa Bailar (Rice University), and one grandchild.

I had the distinct honor and great pleasure of working with Barbara for 20 years.

Obituary

Carol Joyce Blumberg

On December 16, 2023, Carol Joyce Blumberg of Silver Spring, Maryland, passed away at the age of 72 after a long illness.

Carol was known nationally and internationally for her many contributions to promoting statistics education. She was active in the American Statistical Association, Washington Statistical Society, American Educational Research Association, and International Association for Statistical Education. She was chosen to become a fellow of the ASA in 2010 “for notable contributions to statistics education at the national and international level; for outstanding teaching, advising and mentoring; for extensive service to the profession; and for contributions to the fields of educational statistics and energy statistics.” She was also an elected member of the International Statistical Institute.

Carol was born in Detroit, Michigan, and grew up in the suburb of Oak Park. She earned bachelor’s and master’s degrees in mathematics at the University of Michigan and went on to Michigan State University, where she earned a master’s degree in statistics and probability and a doctorate in educational psychology with a major in statistics and research design.

She began her professional career in 1981 at the University of Delaware as a faculty member in the department of educational studies and department of mathematical sciences. In 1987, she accepted a faculty position in the department of mathematical sciences at Winona State University in Winona, Minnesota. While at

the University of Delaware and Winona State, she was also a consultant on educational and psychological research projects, resulting in several published papers. Her areas of research included the errors in variables problem in modeling, application of statistical quality control methodology to educational settings, and methods of teaching data analysis concepts and skills.

In 1993 and 1994, Carol spent a sabbatical year as visiting lecturer at Sheffield Hallam University in England. In 2001 and 2002, her sabbatical leave was split between the ISI in Voorburg, the Netherlands, and Winona State University while working on the development of the International Statistical Literacy Project.

Upon retiring from Winona State in 2006, Carol moved to Washington, DC, where she worked for the US Department of Energy in the Energy Information Administration as a mathematical statistician until her retirement in 2014. At the EIA, she made several important methodological contributions to the work of the petroleum division in the Office of Oil and Gas. These included the computation of yearly change (growth rates) in volume of the supply of petroleum products, computation of confidence intervals for non-standard estimates, and comparison of EIA sampling frames and petroleum price and volume data with external sources. She organized an invited session on energy statistics for the ISI Biennial Meetings, the first such session in many years, shortly after joining the EIA.

Carol was known for her extraordinary commitment to teaching and mentoring. During her career, she consulted with more than 50 students from two school districts on all aspects of their science fair projects and written papers. At the ASA, she was deeply involved in the quantitative literacy effort, including the poster contest. She organized the ASA/WSS display at the USA Science and Engineering Festival for many years. She also organized the WSS Statistics Education Committee and presented well-attended seminars for K–12 statistics teachers and students. At WSS, she revived and became the program chair for data collection methods and organized many successful seminars.

Later, Carol was involved with statistics education generally (including for the ASA Section on Statistics and Data Science Education and IASE) over many years. In retirement, she continued to volunteer in many capacities at the ASA and WSS. She was a recipient of the WSS President’s Award, and her extensive contributions to the WSS, statistics education, and the ASA were much appreciated.

Carol loved eating at restaurants with friends and working sudoku puzzles, at which she was extremely proficient. She also volunteered with Hadassah. She was a loyal friend to many and will be remembered as a brilliant statistician and teacher who genuinely cared for her students and helped others wherever she could. She is survived by her brother, David Blumberg of Laredo, Texas. She will be greatly missed.

Obituary

Johannes Ledolter

Bovas Abraham, University of Waterloo, and Kung-Sik Chan, University of Iowa

It is with profound sadness that we announce the passing of our dear friend Johannes Ledolter, professor of statistics and business at the University of Iowa and emeritus professor at the Vienna University of Economics and Business. Johannes passed away peacefully at his home in Iowa City on November 5, 2023, after a long battle with pancreatic cancer.

Born in Austria and graduating from the University of Vienna, Johannes came to the University of Wisconsin-Madison on a Fulbright scholarship in 1971. That was the beginning of an exciting new life for him.

In 1973, he met Lea Vander Velde, a law student in Madison who later became his wife and life partner. He also met George E.P. Box, one of the greatest statisticians of all time, who became his PhD thesis adviser, mentor, and friend. He earned a PhD in 1975. During that time, he also earned a master's degree in social and economic statistics at the University of Vienna.

Friends from his years in Madison recall his curiosity for learning about his new environment and enjoying the sights and sounds of Madison.

After his graduation in 1975, Johannes spent two years at the International Institute for Applied Systems Analysis in Laxenburg and the Austrian Institute of Economic Research in Vienna. Then, he returned to Madison, where Lea was finishing her law degree, and joined the University of Wisconsin as a research associate working with professors George Box and George Tiao.

Johannes joined the University of Iowa in 1978 with a joint appointment in the department of statistics (later renamed the

department of statistics and actuarial science) and department of business administration (currently renamed as the business analytics department) at the Tippie College of Business. In 2000, he transitioned to the Tippie College of Business as a chaired professor while retaining his lifelong affiliation with the department of statistics and actuarial science. At the time of his passing, he held the Robert Thomas Holmes Professorship in Business Analytics. Johannes also had a joint appointment as professor of statistics at the Vienna University of Economics and Business from 1997 to 2015. Additionally, he had visiting appointments at prestigious universities such as Princeton, Yale, Stanford, and The University of Chicago Booth School of Business.

Johannes enjoyed teaching at all levels. His teaching was recognized with the Tippie Dean's Teaching Award in 2005 and Tippie College Faculty Career Achievement Award in 2023. He gave invited addresses and lectures at various national and international conferences and had several awards from the profession. He was a fellow of the American Statistical Association, a fellow of the American Society for Quality, and an elected member of the International Statistical Institute. He was also honored with the William G. Hunter Award in 2022.

Johannes adopted George Box's philosophy of seeing statistics as a vehicle to solve real-world problems. Instead of bringing a particular set of methods or genre, he took the cue from the real-world problem. As an applied statistician, he was a highly productive researcher and had made seminal contributions to diverse areas such as time series, business analytics, forecasting, industrial statistics, quality, and visual sciences through his books, papers, and technology transfer activities. As a firm believer in experimentation not only in

manufacturing and marketing but also in many other endeavors, he experimented with diverse topics and coauthors. He wrote more than 10 books and was the author of more than 150 papers. His co-authored book with Bovas Abraham, *Statistical Methods for Forecasting*, has been cited more than 1,600 times, according to Google Scholar. His books span areas including forecasting, engineering statistics, business analytics, and text mining, the latter of which was written with his wife, a law professor at the University of Iowa.

Johannes was an excellent statistical leader and educator who served the statistics profession in many capacities. He was passionate about the accurate application of statistics and precise communication of results. He was a careful listener, clear thinker, and problem-solver who was genuine in his approach to getting work done ethically. He has given excellent industrial consultation to organizations such as the Ford Motor Company, Procter & Gamble, American Express, Lenzing Fibers, and Telekom Austria. He also taught workshops for business and quality professionals on topics spanning statistical modeling, forecasting, quality improvement, and data mining.

Johannes was a skilled skier and bicyclist, wood worker, and preparer of paella for the neighborhood block party but, most of all, he was a devoted friend. In addition, he was a cherished mentor to many. He generously shared friendly advice with numerous junior colleagues, encouraging them to think outside the box while keeping the big picture in mind. He was gentle and genuine and possessed a warm personality, always reaching out to connect with his colleagues.

SFASA Event Explores Impact of ChatGPT on Statistics, Data Science

Jingye Wang and Ling Shen



Photo courtesy of Margaret Stedman

From left: Li Zhang, Jing Du, Cristina Tortora, Bonnie Ghosh-Dastidar, Ling Shen, Ruixiao Lu, Jing Huang, and Ron Yu

The San Francisco Bay Area Chapter held its holiday celebration December 10, 2023, at San Jose State University. Keynote speakers James Zou, Jian Dai, and Viji Krishnamurthy, along with panelist Haiyan Huang, shared their insights into the transformative effect of large language models such as ChatGPT. Approximately 160 chapter members attended.

David Czerwinski, associate dean of Lucas College and San Jose State University Graduate School of Business, welcomed all attendees. Ling Shen, chapter president, discussed the chapter's core values, highlighted

activities held in 2023, and previewed upcoming events. ASA President Bonnie Ghosh-Dastidar endorsed the chapter's core values and initiatives, emphasizing that statistical science is essential to generating reliable information on which a healthy society and democracy rely.

In his keynote presentation, Zou—an assistant professor of biomedical data science, computer science, and electrical engineering at Stanford University—discussed the role of LLMs in personalized medicine, unveiling projects showcasing the potential of AI to

transform medical processes and enhance patient care. One such project, featured on the front cover of *Nature Medicine*, is a visual-language AI designed for pathology. This system leverages the capabilities of AI to interpret complex pathology images. By combining visual recognition with language understanding, the tool can provide pathologists with descriptive analyses and preliminary diagnoses, potentially increasing the speed and accuracy of pathology reports.

Krishnamurthy, senior director of generative AI solutions at Oracle, introduced recent industry development of generative AI

chapternews



From left: Tao He, Chenglin Ye, Dai Jian, Neby Bekele, James Zou, Ling Shen, David Zhang, Viji Krishnamurthy, Jing Du, Cristina Tortora, Haiyan Huang, Jing Huang, Li Zhang, Rex Cheung, and Ron Yu
Photos on this page courtesy of Hai Yang



Bonnie Ghosh-Dastidar, 2024 ASA president, gives a speech during the opening remarks.



From left: Jian Dai, James Zou, Viji Krishnamurthy, Haiyan Huang, and Chenglin Ye participate in a panel discussion.

and discussed how it is transforming health care, the life sciences, and enterprise applications. Her keynote underscored the role of AI in augmenting the capabilities of clinical professionals.

Dai, an expert data scientist at Genentech pioneering AI in genomics, presented opportunities for LLM applications in clinical development. He highlighted a project aimed at uncovering overlooked hypotheses in neurodegenerative diseases with LLMs. By sifting through extensive scientific publications, the AI model identifies and reevaluates potential research avenues that may have been overlooked. In his closing remarks, Dai emphasized the need for collaboration

to harness the full potential of LLMs. He said the industry must remain agile, embrace new technologies, and foster a collaborative environment.

Chenglin Ye, senior principal statistical scientist at Genentech, moderated a panel discussion featuring Haiyan Huang of the University of California, Berkeley, along with Zou, Krishnamurthy, and Dai.

The panelists explored practical and philosophical aspects of AI in health care and education. One such aspect is the use of ChatGPT by students for completing homework. The panelists shared a nuanced view, recognizing the tool's potential to aid learning but also cautioning

against a reliance that bypasses critical thinking. The conversation took a visionary turn when discussing AI acceleration versus AI alignment—concepts that deal with the pace of AI development and the importance of aligning AI systems with human values. When addressing the technological singularity—a hypothetical point in time when AI surpasses human intelligence—the panelists concluded that while the future of AI is fraught with uncertainties, it also offers unprecedented opportunities for positive change.

Rex Cheung, chapter president-elect, concluded the celebration by thanking the speakers, panelists, event organizers, and participants. ■

sectionnews

Statistical Computing and Statistical Graphics

The joint sections on Statistical Computing and Graphics recently awarded the 2024 John M. Chambers Statistical Software Award to Sherry Zhang from Monash University for her R package called *cubbl*.

Additionally, the sections awarded a 2024 Student Paper Award to the following:

- **Jae Choi**, University of Texas at Dallas, for “Revisiting Link Prediction with the Dowker Complex”
- **Yu Wang**, Medical College of Wisconsin, for “Rforce: Random Forest for Composite Endpoints”
- **Thomas Sun**, Rice University, for “Ultra-Efficient MCMC for Bayesian Longitudinal Functional Data Analysis”
- **Yuhang Lin**, Iowa State University Center for Statistics and Applications in Forensic Evidence, for “A Reproducible Pipeline for Extracting Representative Signals from Wire Cuts”

The student award recipients will present their work in a topic-contributed session during the 2024 Joint Statistical Meetings in August. They will also receive their certificates and cash prizes at the Section on Statistical Computing and Section on Statistical Graphics mixer.

Mine Cetinkaya-Rundel, Claire Bowen, Steven Chiou, Philip Waggoner, Haim Bar, Lucy D’Agostino McGowan, Susan VanderPlas, and Tim Hesterberg served on the award committees. ■

Government Statistics, Survey Research Methods, and Social Statistics

The Government Statistics, Survey Research Methods, and Social Statistics sections named the following winners of their student paper competition. Each will receive \$1,000 and present their papers in a 2024 JSM topic-contributed session:

- **Priyanjali Bukke**
- **Yanghyeon Cho**
- **Jessica Kunke**
- **Jonathan Mendelson**
- **Mateo Dulce Rubio**

Additionally, the following students were named honorable mentions:

- **Zhanyu Wang**
- **Shuozhi Zuo**

The winners will attend the Joint Statistical Meetings; present their work; and participate in the GSS, SRMS, and SSS business meetings to formally receive their awards.

The following 2024 program chair-elects from the three sections served as reviewers:

GSS: Darcy Steeg Morris

SRMS: Chris Moriarity

SSS: Maria Cuellar ■

Survey Research Methods

The Survey Research Methods Section will sponsor the following four invited sessions at JSM 2024:

- Bayesian Dependent Data Models and Machine Learning for Official Statistics and Survey Methodology
- Combining Probability and Non-Probability Data: Considerations, Methods, and Applications
- Challenging Aspects of Small Area and Survey Research
- Innovative Statistical and Machine Learning Methods for Survey Data ■

Mathematical Statistician

The Office of Biostatistics is seeking individuals with strong statistical methodology skills and an interest in biomedical applications to serve as mathematical statisticians. Incumbents work with multidisciplinary teams of review scientists in a dynamic, highly challenging, and innovative atmosphere of development, evaluation, and research of drug and therapeutic biologics. The Office of Biostatistics is responsible for reviews in all therapeutic areas CDER supports and can be as diverse as cardio-renal, oncology, rare disease, and antimicrobial products. Incumbents have an opportunity to employ a broad variety of statistical procedures relevant to pre-clinical and clinical evaluation decisions for new and generic drugs as well as new and biosimilar biologics and the emerging field of quantitative risk assessment.

DUTIES AND RESPONSIBILITIES

- Evaluate and advise on protocols for clinical studies and assess the evidence for safety and efficacy from clinical studies submitted in drug and biologics applications.
- Employ a broad variety of statistical procedures relevant to pre-clinical and clinical evaluation decisions for new and generic drugs as well as new and biosimilar biologics and the emerging field of quantitative risk assessment.
- Work with multidisciplinary teams of review scientists in a dynamic, highly challenging, and innovative atmosphere of development, evaluation, and research of drug and therapeutic biologics.
- Refine your consulting, communication, and presentation skills and present at domestic and international professional meetings.
- Engage in an active collaborative regulatory research program which will allow you to advance your skills and professional development.
- Interact with national, international, public, and private organizations on statistical issues, and help develop guidance for the pharmaceutical industry.

QUALIFICATIONS

Applicants should possess an advanced degree with specific coursework in Statistics, Biostatistics or Mathematical Statistics. Applicants with a doctoral degree and associated experience are highly desirable. In addition to a background in statistics, applicants should have an interest in biostatistics, clinical trials, epidemiology, genomics, or risk assessment.

The ability to communicate statistical issues to non-statisticians is vital.

Non-US citizens may apply for term appointments.

BENEFITS

Health and Life Insurance
Long-term Care Insurance
Dental and Vision Insurance
Annual and Sick Leave

Paid Holidays
Flexible Spending Accounts (FSA)
Federal Retirement Plan
Thrift Savings Plan (401k)

WORK/LIFE BALANCE

Telework & Alternative Work Schedules
Child Care Center | Fitness Center
Employee Assistance Program/Resource Groups
Commuting and Transportation Programs



ARE YOU INTERESTED IN WORKING AT FDA?

SEND YOUR RESUME OR CURRICULUM VITAE TO:
CDEROTSHires@fda.hhs.gov

LOCATIONS

Mathematical Statisticians are located in the Washington, D.C. area.
Remote employment may be available.

Professional Opportunity listings are shown alphabetically by state.

These listings and additional information about the 65-word ads can be found at ww2.amstat.org/ads.

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

Also, look for job ads on the ASA website at <https://jobs.amstat.org/jobseekers>.

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/22471>. Indiana University is an EEO/AA employer, M/F/D/V.

■ Lecturer Positions, Department of Statistics, Indiana University Bloomington (www.stat.indiana.edu). A PhD is required. A PhD in statistics or a closely related field is preferred. Candidates with a PhD in a field that uses statistics with a master's in statistics will be considered. Position open until filled. Files will be considered beginning February 21. More details and application at: <http://indiana.peopleadmin.com/postings/22267>. Address questions to Kelly Hanna, khanna@indiana.edu.

Indiana University is an equal employment and affirmative action employer and a provider of ADA services. ■

We're Counting On You to Count the Nation!

We offer mathematical statisticians an invigorating and supportive environment where innovation is part of the mission—and people are at the heart of what we do. Collaborate with some of the best statisticians and data scientists in the nation at the U.S. Census Bureau, where we measure the U.S. population and economy.

Why Work at the U.S. Census Bureau?

The value you bring is reflected in our competitive salaries and incentives, best-in-class federal benefits, and flexible schedule offerings. We value:

- Your creativity, ingenuity, and agility.
- Your unique characteristics, skills, and experience.
- Your contributions to our team of world-renowned statisticians.
- Your work-life balance.
- Your career growth and development.

With a strong and adaptive workforce, the Census Bureau can remain at the forefront of data innovations, data quality, and public trust.

What you will do

- Design sample surveys and analyze collected data.
- Research statistical methodology to improve the quality and value of data.
- Collaborate on the design of experiments to improve survey questionnaires and interview procedures.
- Publish research papers.

What you need

- U.S. citizenship.
- Bachelor's degree or higher with at least 24 semester hours of math and statistics, including at least 12 semester hours of mathematics and 6 hours in statistics.

Join the U.S. Census Bureau! Apply at census.gov/jobs today.

The U.S. Census Bureau is an equal opportunity employer.



Statistical Analyst

The Office of Biostatistics is recognized for excellence in the application and communication of statistical science in drug regulation and development. We play a central role in promoting innovative, science-based, quantitative decision-making throughout the drug development life-cycle. To support our Center's mission, we provide statistical leadership, expertise, and advice to ensure that safe and effective drugs are available to the American people.

DUTIES AND RESPONSIBILITIES

- Work with a multidisciplinary review team to provide statistical programming and data management support, assess the quality and completeness of submissions, prepare clinical trial analysis datasets, validate sponsor results, assist in modeling and simulation, and suggest possible additional statistical analyses required to fully evaluate the evidence in the submission.
- Collaborate with scientists from the Office of Pharmaceutical Quality, statistical reviewers in OB, and management on a variety of computationally intensive projects to support and improve the efficiency of regulatory product review, evaluation of pharmaceutical quality and applied regulatory research.
- Use machine learning and natural language processing to assess internal and external data sources to support assessment of quality intelligence throughout the product life cycle.
- Develop, validate, implement, document, maintain and support programming tools and software according to standards and accepted validation procedures; Support efforts to develop, document and apply reusable code and/or tools.
- Develop software using the appropriate statistical programming packages for statistical reviewers to support programming-intensive review-related activities such as sensitivity analysis, Bayesian approaches, clinical trials modeling, genomic studies, psychometric Clinical Outcome Assessment (COA) validation, and simulation.
- Promote and improve the Center data standards initiatives mandated by the Prescription Drug User Fee Act; Monitor the quality of the implementation of data standards used in New Drug Application submissions.
- Apply your skills to address unique and precedent-setting problems, while refining your consulting, communication, and presentation skills.

REQUIRED QUALIFICATIONS

Master's degree in statistics or biostatistics.

Familiarity with R, SAS, data science tools, machine learning predictive techniques and natural language processing.

PREFERRED QUALIFICATIONS

Experience in clinical trials, epidemiology, genomics, or risk assessment. Strong skills in multiple programming environments.

Candidates should also have excellent oral and written communication skills.

The ability to communicate statistical issues to non-statisticians is vital.

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LOCATIONS

Statisticians are located in the Washington, D.C. area.
Remote employment may be available.

This month's Top 10 is the 'Top Ten Awards We Hope You **Never** Receive'

Amstat News continues its entertaining offering by ASA Executive Director Ron Wasserstein, who delivers a special Top 10—one that aired during a recent edition of *Practical Significance*. As this is the time of year when many ASA awards committees will soon be reviewing nominations and making selections, he says, "The *Practical Significance* podcast is always trying to help its listeners, so here is a list of awards we hope you never receive."



Wasserstein



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

10

The Evidence-Free
Decision-Making Award



09

Most Ambiguous
Survey Question

08

Outstanding Grant
Underbidding

07

Acronym Development
Excellence (ACE) Award

06

Anecdotal Evidence
Merit Award

05

Big Data but Small
Insights Medal



04

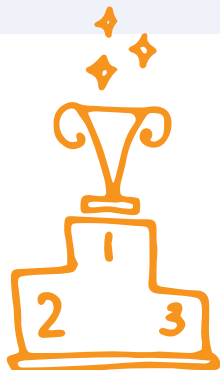
Commendation for
Lowest Response Rate

03

Most Inefficient Use of
Administrative Data Prize

02

Lack of Transparency
Using Statistics
(LOTUS) Award



#01

**The National Prize
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Participation is open to all who are interested in establishment surveys, which is typically those in academia or at national statistical institutes, private businesses, and statistical organizations. Whether your area of interest is estimation strategies, frame development, questionnaire design, data collection, dissemination, or data visualization, you will find something to like at ICES VII.

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The screenshot displays the Stata 18.0 interface with a 'Results' window showing the output of a causal mediation analysis. The command used is `. mediate (bwellbeing, probit) (bonotonin) (exercise)`. The results include the EE criterion, the number of observations (2,000), and the outcome, mediator, and treatment equations. A table of coefficients and confidence intervals is provided for the NIE, NDE, and TE models.

Results

```
. webuse wellbeing
(Fictional well-being data)

. mediate (bwellbeing, probit) (bonotonin) (exercise)

Iteration 0: EE criterion = 1.646e-26
Iteration 1: EE criterion = 1.474e-28

Causal mediation analysis                                Number of obs = 2,000

Outcome model:      Probit
Mediator model:     Linear
Mediator variable:  bonotonin
Treatment type:     Binary
```

	bwellbeing	Coefficient	Robust std. err.	z	P> z	[95% conf. interval]
NIE	exercise (Exercise vs Control)	.2326661	.0159167	14.62	0.000	.2014699 .2638622
NDE	exercise (Exercise vs Control)	.0265368	.0234132	1.13	0.257	-.0193521 .0724258
TE	exercise (Exercise vs Control)	.2592029	.0213726	12.13	0.000	.2173133 .3018925

Note: Outcome equation includes treatment-mediator interaction.

The 'mediate - Causal mediation analysis' dialog box is also visible, showing the configuration for the outcome equation (Model: Probit, Dependent variable: bwellbeing) and the mediator equation (Model: Linear, Dependent variable: bonotonin). The treatment variable is set to exercise.