

AMSTATNEWS

The Membership Magazine of the American Statistical Association • <http://magazine.amstat.org>

ASA 2023 Data Visualization POSTER & PROJECT STATISTICS COMPETITION WINNERS

How to Win the ASA Poster Contest

What factors make for a good ASA poster? How has that changed over time?

Trends in past winning posters help us create the ideal poster for the competition.

ASA winners have always valued bar charts for their simplicity. In fact, Every single winner from 2017 featured at least one bar graph. Recently, more complex graphs have started to rise in popularity, and there has been a corresponding decrease in bar graphs since 2019.

Over the years, The ASA Data Visualization Competition has seen a significant increase in the amount of area taken up by graphs and in the diversity of graphs in the winning posters.

Sample images are taken from past ASA winners* (2015-2022). All graphs and text are converted into solid colors.

Original Edited

Image credit: Michelle Hopkins, Sabrina Harries, Dyll Gordon, and Harriet Maxwell (2019)

All of the posters are placed together... and processed into a usable format

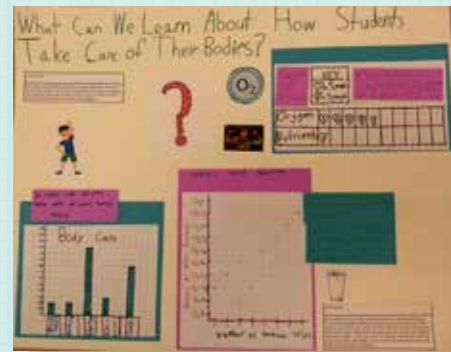
which we used as our poster template

Poster Area Distribution Over Time

█ Area Percentage of Poster Area █ Area Percentage of Poster Area

*Data was collected from the top three posters in the 4-6th, 7-9th, and 10-12th ASA competition categories from 2015-2022.

In the winning poster there generally were three main graphs, along with supporting text, a brief introductory text plot, a large conclusion (this one), and a title. There is a correlation between the amount of space graphs take up and the diversity of types of graphs used. They both saw a rise in popularity until 2021 when the number of unique graphs stabilized between 4 and 5 (ours has 4), and the area of posters taken up by the graphs stabilized between 35% and 40%. Our poster ended up covered by 37% graphs and 22% text. The types of graphs used varies wildly from year to year although bar graphs are consistently the most popular despite declining since 2019.



The Gaming Generation

Aim: To describe gaming usage, patterns and character preferences of middle school students.

Survey Data

- N = 136
- 47% of 7th grade middle school students completed survey during math classes

Favorite Styles of Game Play

Average number of hours students game

Favorite Smash Brothers characters

Gaming systems:

- Wintendo Switch: 74 (67%)
- Xbox: 68 (50%)
- Computer or PC: 53 (48%)
- PlayStation: 32 (29%)
- Other: 22 (16%)

Students game longer on weekends than weekdays (statistical significance). There is more variability in how much gaming on weekdays (order system).

The Effect of Education, Location, and Income on Life Expectancy in the USA

Education Level vs Life Expectancy

Life Expectancy across USA

Geographical Location

Income Level

Statistical Question: Does Education Level, Income Level, and Location positively correlate to the Life Expectancy across the USA?

Conclusions and Future Work

ALSO:
Meet Bureau of Economic Analysis Director Vipin Arora
Invited Session Proposals Sought for JSM 2024



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

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columns

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**United Nations Sustainable Development Goals:
A World of Opportunity in Data for Good**

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.

- 26 **STATtr@k**
**How to Engage in Self-Care as You Grow as
a Statistician**

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.

JEDI CORNER

The Justice, Equity, Diversity, and Inclusion Outreach Group is sponsoring or cosponsoring more than a dozen activities at this year's Joint Statistical Meetings in Toronto. Review them online at <https://magazine.amstat.org>.

Deadline Extended

The abstract submission deadline for concurrent presentation abstracts has been extended to August 18 for the 2024 Conference on Statistical Practice, which will take place February 27–29, 2024, in New Orleans. Each presentation will last 35–40 minutes and should focus on any one of the four broad conference themes: career, professional, and leadership development; study design and data management; implementation and analysis; and effective communication. Visit the CSP website for details: <https://bit.ly/44Ekgfl>.

American Association of University Women Offers Funding Opportunities

Several fellowships and grants, including career development grants and community action grants, are available from the American Association of University Women. While most are for women, some are open to others. Visit the AAUW website for the list: <https://bit.ly/3DgcxZ2>.

Registration Opens in Fall for Modeling the Future Challenge

Sponsored by the Actuarial Foundation, the Modeling the Future Challenge presents a modeling problem with mathematical and statistical solutions.

Teams must be composed of one to five high-school juniors and seniors. Finalists are invited to the Modeling the Future Symposium, where they will present their models to a judging panel for the chance to win one of four scholarships totaling \$60,000. Schools are also eligible for special awards. Registration begins in September; entries are due in mid-November.

For more information, visit www.mtfchallenge.org and www.mtfchallenge.org/how-it-works. View the competition timeline at www.mtfchallenge.org/timeline.

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ASA 2023 Data Visualization Poster & Project Statistics Competition Winners

USCOTS 2023: Educators Share Ideas for Communicating With/About Data

40 meetings

Invited Session Proposals Sought for JSM 2024

SDSS 2023: Diverse Panels, Engaging Discussions, Memorable Experiences



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Telling Our Stories

The practice of statistics empowers researchers, policymakers, and individuals to drive innovation, understand complex phenomena, and make informed decisions. However, the public may not fully grasp the transformative power of our profession. To address this knowledge gap, I am delighted to announce the “Telling Our Stories” video project, which will feature a series of thought-provoking interviews with expert statisticians, as well as scientists, researchers, and experts from diverse disciplines.

Each video will delve into real-world examples, demonstrating how statistics has revolutionized fields such as health care, economics, the environmental sciences, technology, and the social sciences. These compelling narratives will showcase how statistical analyses have led to breakthrough discoveries, evidence-based policy-making, and improved decision-making processes, ultimately shaping the fabric of our society. Once the videos are created, they will be available on our website and the social media platforms we use.

This project would not be possible without the generous support of Nan Laird, a trailblazer in our community. Below, I share a recent conversation I had with Nan in which she graciously shared a few of her stories

Dionne: *Your gift will support the “Telling Our Stories” video project. What inspired you to work with the ASA on this particular project?*

Nan: I was so honored to receive the 2021 International Prize in Statistics. It made me reflect on how lucky I was to have chosen a career that brought me so much joy and fulfillment. The prize came with a substantial monetary amount. I felt I wanted to give

back the prize money to educate the public on what statisticians do and how we change their world.

I thought it would be rewarding to work with the ASA to raise the profile of statisticians and the critical role they play in all aspects of society. In particular, 2021 was also the middle of the pandemic. And there wasn't much you could do except watch the news and read the newspapers. We were just seeing a lot of news where statisticians could weigh in, but we didn't see many statisticians weighing in, at least in the news I was watching.

The other big area we were hearing about was the integrity of elections. And I'm thinking to myself there must be statisticians who know a lot about these subjects. Why aren't we hearing from them?

Dionne: *Since we're discussing the storytelling project, would you share one of your statistical stories with us?*

Nan: Yes, I'd be happy to share. I have a number. But I think the one that had the biggest impact was my service on the National Research Council Committee on Airliner Cabin Air Quality. This was back in the mid-80s. The early airplanes were designed to constantly draw in outside air as a way of keeping the cabin air fresh. At about that time, the airlines redesigned the planes. The newer planes were not equipped to draw in fresh air; they had to recirculate the air. There was a process for cleaning up the recirculating air, but it really wasn't adequate for eliminating cigarette smoke. The airlines created special smoking sections to deal with the problem, but these smoking sections were generally located near the galleys, meaning the flight attendants had a particularly heavy exposure. The public and unions representing flight attendants

were lobbying Congress to do something about smoking on airplanes. Congress was reluctant to act on this without any evidence concerning air cabin quality, so a National Academies committee was charged with investigating whether the existing air quality standards were adequate.

There were 11 of us on this panel. I was the only statistician; others included an epidemiologist, medical doctors, occupational health and safety experts, and airplane engineers. We looked at a tremendous number of aspects, but one of the things we did that I think was most crucial was to consider the exposure of the crew to cigarette smoke and how it might affect the health of the crew.

Not surprisingly, there were no direct studies of the impact of side stream smoke on flight attendants, but there were two related epidemiological studies nearing completion. We had the principal investigators of these studies come and talk to us about their results.

One of the studies I remember clearly involved pairs of spouses. In one pair, one spouse smoked and the other didn't. In the other pair, neither spouse smoked. These were long-term studies that looked at the incidence of lung cancer, comparing the spouses whose partners smoked to the spouses whose partners did not.

They did find a risk ratio of approximately 2. Although a risk ratio of 2 is low, it was clear, and there were consistent signals that being exposed to a pack of cigarettes/day from side stream smoke would lead to increased lung cancer over time. This finding coupled with the fact that we made measurements and calculations of the amount of exposure the air cabin crew was exposed to and found they were exposed to about the equivalent of a pack/day of side stream smoke.



Dionne Price

A DEEPER LOOK

Get the details of the air quality report Nan Laird worked on and discusses in this interview at <https://bit.ly/3Q6Lqaz>. And make sure to watch the TED talk by Anne Milgram, former attorney general of New Jersey, at <https://bit.ly/43GS8r3>.

MORE ONLINE

View the complete interview at <https://magazine.amstat.org>.

On this basis, we recommended that smoking be banned from airplanes. This was a huge boost in terms of helping the anti-smoking on airplane groups move forward and to get Congress to enact a ban, first for two years on short flights of less than two hours. Then the ban was extended to all flights within the United States and, ultimately, to international flights, as well.

As a statistician, why was I there? I was there because one of the things I was interested in was meta-analysis. We didn't do a formal meta-analysis because there wasn't enough data. It was more of a question of assessing the validity of the literature available that might bear. I don't claim to have single-handedly eliminated smoking on airplanes, but I was a member of a team that had a tremendous impact. In-depth knowledge of statistics is not required to be impressed by the impact of this work. Many people remember what it was like to travel on airplanes before the smoking ban and are especially grateful.

Dionne: *One of the goals of "Telling Our Stories" is to raise public awareness about the impact of statistics and data science. What do you hope the public learns about our profession from this project?*

Nan: What I hope they learn is how vital statistics and statisticians are to their daily lives. I also want to encourage statisticians to learn how to effectively tell their stories.

I think there are several emerging areas of research in which statistics plays a big role. For example, climate change. A lot of people do not understand the climate is changing. Statisticians have had a lot to say about the effects of environmental exposures on health, and that leads quite naturally to the issues surrounding climate change.

Social justice is another field people are so interested in, and statisticians are in a great position to make important contributions.

The stories don't necessarily need to be told by statisticians. There's a wonderful TED talk ["Why Smart Statistics Are the Key to Fighting Crime"] by a former attorney general of New Jersey [Anne Milgram]. She talks about how she used statistics to reform the criminal justice system there. I would encourage everyone who wants to try and explain why statistics is important to watch it.

Another emerging area is aging. Now, many of us who are already there are interested in how to stay active and healthy. There are also the effects of an aging population on society. I'm sure statisticians have a lot to contribute.

Dionne: *Can you tell us how you became interested in methods that have made possible the analysis of complex longitudinal studies?*

Nan: The work I did on longitudinal studies stemmed from a long and productive collaboration I had with Jim Ware. I joined the biostatistics faculty in 1975 fresh from my PhD. A few years later, Jim Ware joined the faculty, and we became close colleagues and friends, even though we had somewhat different backgrounds. I worked on random effects models for two-way contingency tables, which evolved into working on the EM algorithm. Jim had been at the NIH [National Institutes of Health] working on growth data. He came to Harvard to work with the Harvard Six Cities of Air Pollution and Health, an ongoing study comparing long-term health outcomes of people living in cities with different air pollution profiles.

Many age groups and health outcomes were being studied. One area of focus for Jim was the hypothesis that living in a highly polluted city could impair growth in lung function in children. This was difficult because the design of the study was highly unbalanced for this endpoint. The sample design specified repeated annual sampling of classrooms

in schools, but taking measurements of all individual students present on that day. Besides the incompleteness in the data, there were many adjustments needed. Jim was aware of my work on the EM algorithm and general linear mixed models, so he asked me to consult on the Six Cities study.

I spent a number of years engaged in that work. They were wonderful years; Jim and I were a good pair. Jim had a very good understanding of the tools practicing statisticians were using to analyze these types of data, and I was more focused on methods. We worked closely and went on to consider related issues, developed a course we co-taught with Garrett Fitzmaurice, and then published a popular text on the subject.

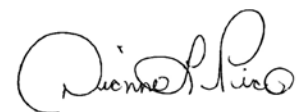
The Six Cities study was a tremendous success in terms of showing the effects of air pollution in many areas. We were not able to show any effects of air pollution on the growth of lung function in children. I think we do not know if it was the design of the study, the analysis, [or] the absence of any effect.

Dionne: *Your stories are inspirational to me, Nan, because some of the work you've done has become part of the curriculum in many graduate programs. This has been a real honor for me, because I've read your work, your papers, as a graduate student and incorporated some of it into my dissertation.*

During our conversation, what really affected me is how your work has been motivated by real-world problems.

Thank you!

Nan: I'm thrilled the ASA is doing this. I think it's a wonderful project, and I'm sure it will go a long way.



Staff Spotlight: Sabina Schlichtmann



Sabina Schlichtmann

Hello, *Amstat News* readers! My name is Sabina Schlichtmann, the new meetings coordinator, and I am excited to share a bit about myself with you. Born and raised in the vibrant city of Lima, Peru, I embarked on a new chapter when I came to the United States with my family at the age of 21. We settled in New Jersey but moved around for a bit between Passaic County and Bergen County. I also moved to Fairfax to spend some time with a cousin, so I'm not new to the DMV.

Driven by a sense of adventure and desire to serve, I made the decision to join the military. From 2017 to 2020, I proudly served in the United States Marine Corps, where I gained invaluable experiences and developed skills that would shape my future. I was stationed in Camp Lejeune, North Carolina.

I was eager to expand my knowledge and pursue my academic aspirations, so I enrolled at the University of Maryland Global Campus to pursue a bachelor's degree in business administration. With 100 credits already completed, I find myself inching closer to the finish line, motivated to achieve my educational goals.

As I share my journey with you, I hope to inspire you to embrace new experiences, pursue your passions, and strive for personal growth

In my free time, I enjoy engaging in activities that keep me active and refreshed. Walking is a simple pleasure that allows me to explore my surroundings, clear my mind, and appreciate the beauty of nature. Maintaining a healthy and balanced lifestyle is important to me, and that includes regular workouts. Whether it's hitting the gym or engaging in outdoor activities, I find physical exercise not only keeps me fit but also provides a sense of accomplishment and mental clarity.

I also love traveling to see new places. I have been to Punta Cana, Dominican Republic, and Cancun, Mexico. I will go to Switzerland for a cousin's wedding this summer. I am excited, as this will be my first trip to Europe and I'm looking forward to all the new experiences there.

As I share my journey with you, I hope to inspire you to embrace new experiences, pursue your passions, and strive for personal growth. I am grateful for the opportunities that have come my way and excited to see what the future holds. I have enjoyed my time at the ASA so far and look forward to attending our annual conference in Toronto, Canada.

Thank you for taking the time to get to know me a little better. I look forward to connecting with all of you and learning from the diverse perspectives and insights within the ASA community. ■

Significance Publishes 100th Issue



Celebrating 100 issues of the magazine, the June issue is a special edition featuring a look back at the origins of *Significance* and how its mission to make statistical stories engaging and accessible continues today. The cover story features reflections from founding editorial board members, past editors, and prominent contributors.

June Highlights

Welcome to the 100th Issue | A look back at how *Significance* started and what it means to those along for its journey

Data at the Ballet | How does statistics help dancers wow Royal Opera House audiences?

Swimming for All | Creating better competitions for swimmers across all age groups and disability classifications

Law of Small Numbers | “Gambler’s fallacy,” stereotyping, and misinformation—the implications of human bias

Dragons and Data: Breathing life (and fire!) into undergraduate statistics classes

Interview: Anar Meshimbayeva | We catch up with the former head of Kazakhstan’s national statistical office.

Access the digital version of *Significance* through the ASA membership portal at www.amstat.org/account. Print issues will be mailed to subscribers soon.

Significance is also online at www.significancemagazine.com.

JSDSE HIGHLIGHTS

Summer Issue Features ChatGPT Guide for Teachers, Jackie Dietz Best Paper Award Collection

Nicholas Horton, *Journal of Statistics and Data Science Education* Editor

The summer 2023 issue of the open-access *Journal of Statistics and Data Science Education* is online and features an editorial plus 10 articles.

Maria Tackett’s paper, “Three Principles for Modernizing an Undergraduate Regression Analysis Course,” leads the issue, offering guidance on engaging with real-world data, developing reproducible workflows, and improving teamwork.

The following articles touch on several topics in teaching statistics and data science:

- Amanda R. Ellis and Emily Slade offer guidance about how ChatGPT and other large learning models can enhance statistics and data science education.
- Nathan Taback and Alison L. Gibbs report on a randomized study of a “nudge” to improve students’ attitudes toward statistics.
- Mine Dogucu, Alicia A. Johnson, and Miles Ott share a framework for accessible and inclusive teaching materials.
- Davit Khachatryan offers a structure to incorporate Spotify and musical data into the classroom.
- Elizabeth G. Arnold and Jennifer L. Green describe how annotated lesson notes can improve statistics education.

- Kady Schneider, Kimberleigh Felix Hadfield, and Jenny Lee Clements propose ways to leverage large classes to create more engaging environments.

- Wen Huang, Jeremi S. London, and Logan A. Perry describe the benefits from a project-based learning course on perceived relevance.

- Claudia C. Sutter, Karen B. Givvin, Mary C. Tucker, Kathryn A. Givvin, Ana Leandro-Ramos, and Paige L. Solomon further explore concerns and challenges for students due to the pandemic.

- Laura A. Hildreth, Michelle Miley, Erin Strickland, and Jacob Swisher close out the issue with a description of an innovative approach to foster written communication skills.

A new collection of papers that won the Jackie Dietz *JSDSE* Best Paper Award is available at <https://bit.ly/43lFZrh>.

For 31 years, *JSDSE* has disseminated accessible knowledge for improving data science and statistics education at all levels. The journal is published jointly by the American Statistical Association and Taylor & Francis; has no author publication charges; and welcomes submissions from educators, practitioners, and researchers around the world. Read papers or sign up as a reviewer at <https://bit.ly/44CyaP2>. ■

Greek Government Withdraws Challenge, Removing Obstacle for Georgiou



Andreas Georgiou
Photo courtesy of the Georgiou family.

In July, the Greek government withdrew its June challenge of the European Court of Human Rights March 2023 ruling in favor of Andreas Georgiou—statistician and former president of the Hellenic Statistical Authority—finding Greece violated his right to a fair trial on violation-of-duty charges. In late May, the Greek Supreme Court annulled an appeal’s court 2021 decision upholding a lower court’s 2017 conviction for simple slander (i.e., making true statements that damage the reputation of the plaintiff).

The European Court of Human Rights ruling regarded violation of duty charges, which contend Georgiou violated his duty as head of the Hellenic Statistical Authority (ELSTAT) when—in November of 2010—he did not put up the revised 2006–2009 public finance statistics for a vote following such demands from a then-existing board at ELSTAT. For this charge, he was initially cleared by a three-judge panel before being subjected to a double jeopardy trial in which he was convicted and sentenced to two years in jail (suspended). Subsequently, the Greek Supreme Court confirmed Georgiou’s conviction.

Georgiou’s appeal to the European Court of Human Rights stated his human right to a fair trial was violated because the Greek court did not

The heads of the National Statistical Institutes ... have the sole responsibility for deciding on statistical methods, standards and procedures, and on the content and timing of statistical releases.

consult with the Court of Justice of the European Union on the meaning of the European Statistical System’s “European Statistics Code of Practice,” which—under the principle of Professional Independence—includes this indicator: “The heads of the National Statistical Institutes ... have the sole responsibility for deciding on statistical methods, standards and procedures, and on the content and timing of statistical releases.”

Georgiou now awaits to see whether the Greek judiciary will reopen the case, as explicitly recommended by the European Court of Human Rights.

The Greek Supreme Court’s decision to annul the Civil Appeals Court January 2021 decision against Georgiou for simple slander means the latter court would have to hear Georgiou’s previous appeal of a lower court’s August 2017 conviction again if the plaintiff or Georgiou requests it.

The plaintiff, who was the government employee who oversaw the initial Greek 2006–2009 financial figures revised under Georgiou’s leadership, has potentially until 2041 to decide whether to request the retrial at the Civil Appeals Court. While the Supreme Court’s annulment is encouraging, it potentially extends Georgiou’s saga into a third decade. Georgiou intends to initiate the retrial at the Civil Appeals Court himself, hoping to put a definite end to the uncertainty and persecution he faces.

With the longstanding support of its board of directors, the ASA will continue to monitor Georgiou’s case, support him against persecution, and join him in defending the integrity of government statistics. ■



Lydia Gibson

My ASA Story: Lydia Gibson, Graduate Student

In the winter of 2021, following the economic downturn due to the COVID-19 pandemic, I decided to change careers and pursue an MS in statistics in hopes of increasing my earning potential and, in turn, making a better life for myself. Like many other students who attend minority-serving institutions, I do not come from a background of generational wealth, but I understand the value of a college education.

I am not a first-generation college student, but I am a first-generation American. I'm the daughter of immigrant parents and the only member of my family to pursue graduate studies in STEM. As such, I had to figure out a lot of my new educational and career goals without the aid of my family but, taking a cue from my sister's participation in the National Society of Black Engineers, I decided a good first step would be to join a professional society.

When I first joined the American Statistical Association in August of 2021, I had no idea just how big of an impact that one decision would have on my life. Like many other students, I joined with the hope of increasing my job prospects through networking and making invaluable connections with professional statisticians, but I came away with that and much, much more. On top of helping to advance my career, my involvement with the ASA allowed me to hone my leadership skills and strengthen my ability to advocate for myself and others.

One of my earliest experiences and the motivation for my continued active participation within the ASA community was the 2021 Joint Statistical Meetings. There, I met my mentor, Teri Utlaut, whom I work alongside as a data scientist at Intel. It was also at JSM that I first learned about the ASA Justice, Equity, Diversity, and Inclusion

Outreach Group from Kim Sellers, the JEDI inaugural chair who later nominated me to co-chair the JEDI Student and Young Professional's Committee alongside Robert Tumasian III. My attendance at JSM was also the catalyst for my schoolmates and me to co-found the ASA student chapter at our alma mater, California State University East Bay.

Knowing how transformative joining the ASA and attending conferences such as JSM has been for me, I developed the drive and passion to help other students—especially my schoolmates—gain access to resources that help them along their career journeys. As co-founder and president of the California State University East Bay ASA Student Chapter, that drive manifested as efforts to find opportunities and the means for my organization's members to network with professional statisticians and data scientists. That, in turn, resulted in the student chapter ASA



Lydia (far right) with ASA Executive Director Ron Wasserstein and several members of the California State University ASA Student Chapter

Attending CSP 2023 has been one of my most rewarding ASA experiences to date.

speaker series events, my student chapter members volunteering for and sponsoring the 2022 holiday party for the San Francisco Bay Area Chapter, and several of us attending the 2023 Conference on Statistical Practice.

Attending CSP 2023 has been one of my most rewarding ASA experiences to date. Thanks to the funding I received from the California State University East Bay Department of Statistics and Biostatistics and the 2023 Lingzi Lu Memorial Award, I was able to experience all CSP had to offer. This included attending the full-day course titled Hands-On Python Programming for Predictive Analytics and Machine

Learning; the tutorial titled How to Make Outstanding Statistical Presentations; and various talks, panels, and poster presentations. A couple of my classmates also received funding from our department to cover their registration fees, while others were able to attend thanks to the ASA Student and Early Career Travel Fund.

Following CSP, I once again witnessed the transformative power of attending ASA conferences when my schoolmate Alicia Alvarez secured a summer internship at Virginia Tech's CUBE (Collaborative Undergraduate Biostatistics Experience) program for underrepresented undergraduates in STEM, all through connections she made at CSP.

As my time as a statistics student comes to an end, I look forward to embarking on new adventures as a graduate statistician. I plan to continue actively participating in the ASA community as both a member and leader, including by serving as the 2024–2026 Council of Sections representative for the Statistical Computing Section.

My journey will also consist of paying it forward by serving as a mentor to and advocating for other statistics students (<https://magazine.amstat.org/blog/2023/05/01/student-travel-funding-equity>), especially those from marginalized backgrounds. The ASA and its conferences have been immeasurably beneficial to me, so I hope to help other early-career folks reap these benefits, as well. ■

MORE ONLINE
Read about Gibson's experience as co-chair of the JEDI Student and Young Professional's Committee: <https://magazine.amstat.org/blog/2023/03/01/jedistudent>.



Chris Barker

A Statistician's Life: Chris Barker

Kim Gilliam, ASA Marketing Project Manager

Longtime statistical consultant Chris Barker had his sights set on retirement a year before the pandemic. He reflects, “While there is nothing good to be said about the pandemic, my retirement was interrupted by clients who asked me to return to work on drug development projects for the treatment of COVID-19. I recognized an essential role for statisticians during the pandemic to address—when and where possible—disinformation about the vaccine development efforts and a variety of other matters related to the COVID-19 virus, such as virus aerosol transmission. This was exciting.” So, Barker tracked the clinical trial and related COVID-19 research and often posted summaries in the ASA COVID-19 community.

Academic Background

Looking back, Barker admits his academic background was “not linear.” He originally went to graduate school to study economics but later decided to pursue a degree in biostatistics. After many years of working on pharmaceutical clinical trials, he came ‘full circle’ and started work as the sole statistician for the newly created Roche Global Health Economics Group and continued a health economics statistics role later at Johnson & Johnson. His responsibilities included preparing

statistical analyses of the phase III trials to use in the economist models of cost-effectiveness, cost-utility, or cost consequences.

“In hindsight, my nonlinear path was exactly the training I needed,” said Barker. “My main academic transition was from economics to statistics, then effectively returning to economics. I was an undergraduate economics major with a side interest in molecular and cellular developmental biology at the University of Colorado, Boulder.”

In the current era of mRNA COVID vaccines, Barker said he first learned about mRNA in an undergraduate molecular biology course in 1974 from the developer of the first electron microscope photography scientific processes, procedures, and original photography—Keith Porter—and his collaborator Mary Bonneville at UC Boulder.

Barker pursued an economics degree at Northwestern University and, on the suggestion of a fellow student, entered a biostatistics program at the University of Pittsburgh, ultimately graduating from the University of Illinois Chicago School of Public Health. “That experience was perhaps sheer luck,” said Barker.

“It enabled me to take graduate statistics classes at UICSPH, Northwestern, and The University of Chicago, where I met Paul Meier,” Barker said. “He later hired me to work as a member of the

small biostatistics group in the department of medicine. ... In collaboration with Paul's daughters, we published a newspaper article in *STAT News* recalling Paul's work on 'The Cutter Incident,' in which Paul was part of the team that discovered failures in production practices at Cutter that led to vaccines that caused polio in young children."

Pathway to Industry

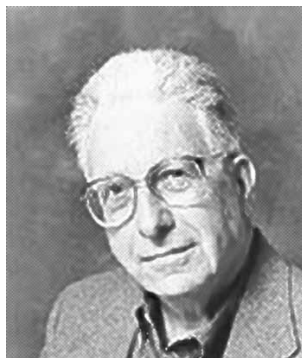
Barker landed in the pharmaceutical industry at Lorex, a joint venture of Searle and Synthelabo, working on phase III clinical trials conducted in the United States of the now widely used sleep hypnotic drug Ambien. After moving to California in 1989, he worked at Syntex on an immunologic drug, which was eventually approved with the name CellCept and based on a molecule called mycophenolate mofetil.

His manager at the time, Mike Cramer, assigned him to a project for which they only conducted studies on mice. He continued to work on the molecule until there was worldwide approval of CellCept for humans. According to Barker, these were the largest multicenter international clinical trials in transplant drugs ever conducted for people who receive a kidney, heart, or liver 'solid' organ transplant.

"Particularly gratifying, to this day, was that the endpoints of the clinical trial were acceptable to the FDA," said Barker. "My medical colleagues and I defined for that first-ever clinical trial CellCept approval, which appears largely unchanged and in routine use today for every subsequent transplant drug approved by FDA."

Shortly after the phase III clinical trials were analyzed and reported as positive—surpassing Barker's wildest expectations—Roche acquired Syntex and he continued working at Roche.

During the 1990s, pharmaceutical health economics—pharmacoeconomics—was becoming an essential activity for every pharmaceutical company, often using the phase III trial results, said Barker. "Because of my initial education in economics and then biostatistics, both the vice president and director of the first Roche Global Health Economics and Strategic Pricing Group invited me to be the statistician for the economists located in Roche offices around the world. The



Paul Meier

pharmaceutical industry has since recognized that drug/medical device/diagnostic/vaccine developers must consider whether a new drug, etc., is likely to be reimbursed by Medicare in the United States and comparable health authorities in every other country. This provided me an opportunity to collaborate with nearly every clinical trial statistician worldwide at Roche."

According to Barker, one of many fascinating discoveries and a seemingly not well-known aspect of pharmaceutical drug (or device, diagnostic or vaccine) pricing is called "discrete choice" modeling, or more formally, "conjoint analysis"—a method originally developed by John Tukey. Barker was impressed by the rapid adoption of Bayesian biostatistical methods by the pharmaceutical industry and regulatory agencies worldwide. He encourages graduate students to learn computer programming and stresses the importance of learning to develop, estimate, and interpret Bayesian statistical models, clinical trials, and other experiments using Bayesian methods.

Statistics and the Pharmaceutical Industry

During the 1990s, Barker was particularly fond of working with health economics data (e.g., hospitalizations, medication usage, doctor visits), which he says was long recognized as "some of, if not the messiest" data collected in the pharmaceutical industry. Barker said, "By messy, I do not imply it was collected poorly, but that substantial resources—mainly investigators and trained industry people—are required to guarantee the accuracy of the data and the data are inherently complex."

Furthermore, at Roche, there was a corporate-wide policy that health economics outcomes were not to be used as a basis, for example, the primary trial endpoint used for drug approval by regulatory agencies. Barker said, “Fortunately, I was able to publish two sole-author publications about some interesting technical and data-related issues. I discovered one when estimating the Kaplan Meier Mean using commercial software.”

“I believe it to be a completely innovative and novel way of summarizing and graphically displaying so-called concomitant medication data,” said

Barker. “I adapted the existing methodology from Bill Nelson for the ‘mean cumulative function’ ... By my good fortune, one of Paul Meier’s daughters forwarded a copy of my KM [Kaplan Meier] paper to Paul and reported back to me that his comment was, ‘Reads well.’ Having worked for Paul and attended his classes, I considered that high professional praise and as close to the Nobel as I’ll ever get.”

Barker describes his role in health economics as a type of “liaisonship” with the clinical trial statisticians and project economist. He kept the clinical trial statistician apprised of how clinical trial results and those analyses might be used in the economics models. “I was sensitive to avoiding situations where the clinical trial statisticians prepared an analysis one way, while a different analysis and possibly a different interpretation was prepared in health economics,” said Barker. “This was never a serious problem. I recall, however, that I had little success trying to explain ‘noninferiority’ analyses to the economists and I was unsuccessful in having the noninferiority results explicitly included in the economic models. My concerns and approach appear to be consistent with the recommendations of the FDA about economic and similar models of the trial results.”

In hindsight, there are a few things Barker wished he’d known back then. “I don’t think that the high probability many pharmaceutical companies will acquire or be acquired by another—or substantially restructure their company—regardless of the size of the company, is unusual in the pharmaceutical industry,” Barker said. “This does not reflect on one’s talents. It is enormously disruptive to the individual statistician and their family and their career path. My experience so far is that, and my personal assessment is that, long-term employment opportunities and career growth for statisticians are abundant in the pharmaceutical industry.”

Importance of ASA Membership

As a member of the ASA, Barker says the benefits he’s received in his career are quantifiable. He has volunteered in a variety of roles, ranging from his service as president of both the Sacramento and San Francisco Bay Area chapters to his service on the Dixon Committee and with Statistics Without Borders to his current service as chair of the ASA

NHLBI to Hold Biostatistics Workshop on Clinical Trial Designs

The Office of Biostatistics Research at the National Heart, Lung, and Blood Institute will host a two-day workshop September 18–19 at the Natcher Conference Center on the main campus of the National Institutes of Health in Bethesda, Maryland, and virtually via Zoom.

This workshop will address two main design issues for randomized clinical trials: selection of clinically meaningful endpoints and appropriate futility monitoring.

Topics include the following:

- Statistical methods for endpoint choices
- Endpoints in cardiovascular diseases
- Endpoints in blood and lung diseases
- Logistics for statistical futility monitoring
- Statistical methods for futility monitoring
- Case studies for futility monitoring

Experts from academia, industry, and the US federal government will share their insights and solutions to these issues. The conference should be of particular interest to biostatisticians, clinical trialists, medical researchers, and clinicians.

This workshop is free and open to the public, but registration is required at www.eventbrite.com/e/663908366797.

For more information, visit <https://bit.ly/3Q1EEmm> or email Barbara Bloomquist at barbara.bloomquist@nih.gov.

... [M]y personal assessment is that, long-term employment opportunities and career growth for statisticians are abundant in the pharmaceutical industry.

Statistical Consulting Section. “One fond memory of my San Francisco Chapter work is developing the annual program for Bay Area statisticians to give a lecture about careers in statistics to students in AP Statistics classes in area high schools,” said Barker.

Currently, Barker is working to expand the visibility of the Sacramento Chapter to local graduate and undergraduate statistics departments.

Gratitude

Over the years, many mentors and individuals have inspired Barker, providing him with guidance and playing pivotal roles in his education and career. He was inspired by his thesis adviser, Paul Levy, chair of the biostatistics department at the University of Illinois Chicago School of Public Health, whom he refers to as an “expert” in sample surgery methodology.

Barker credits his early career choices to Carol Redmond, emeritus professor of biostatistics at the University of Pittsburgh, who offered him his first job working on oncology clinical trials during graduate school. She also taught him principles for communication and interpretation of clinical trials he still uses today.

And there is Meier, who Barker met as a student in his biostatistics seminars at The University of Chicago.

“All of these people and more helped pave the path of this statistician’s life,” said Barker. ■

JOIN

A SECTION OR CHAPTER

STAY CURRENT

with the different methodologies and applications in your area of expertise

EXPLORE chapter and section leadership opportunities

EXPAND your professional network and strengthen your relationships in the community

If you’ve been thinking about joining an ASA section or regional chapter, we have made it easier than ever. With a few clicks, you can add section and chapter membership and pay online.

Chapter and section membership can greatly enhance the value of your membership.

Add section and chapter membership at ww2.amstat.org/membersonly/additems.



Caucus for Women Announces Societal Impact Award Winner

Travel Award Applications Being Accepted

Saleha Habibullah, professor of statistics at Kinnaird College for Women, was chosen by the Caucus for Women in Statistics to be the third recipient of the Societal Impact Award. The award recognizes the impact statisticians have on society at large and is given annually to a statistician who has actively worked to advance social justice or diversity, equity, and inclusion through their research, teaching, or service.

Habibullah was chosen for her outstanding contributions to educating women; for innovative initiatives in statistical education; for serving a pivotal role in connecting local statisticians with international colleagues through virtual conferences, online training workshops, and collaborative research studies; and for being a true ambassador of her country all over the world.

Details about this award can be found at <https://cwstat.org/societal-impact-award>.

Biswas Student Travel Award

The caucus is accepting applications for the Prof. Suddhendu Biswas Student Travel Award until August 31. This award is for an individual in a developing country to attend an international conference in India.

JSM Travel Award

Following are the caucus's JSM Travel Award winners:

- Do-Bui Travel Award: **Syantee Jana**
- Lee Travel Award: **Taylor Krajewski**
- Travel Award: **Ann Marie Weideman**

International Day for Women

The Caucus for Women in Statistics will celebrate the second annual International Day for Women in Statistics and Data Science on October 10 from midnight to midnight UTC time. The event is virtual and free. Learn more and register at www.idwsds.org.

Florence Nightingale Day

To honor Florence Nightingale's legacy, Florence Nightingale Day was launched in 2018 by 2018 caucus president Shili Lin to engage students, promote future career opportunities in statistics and data science, and celebrate the contributions of women in these fields (see Page 15). Pre-college students (ages 13 and above) from around the world will attend this one-day event offered at various times and places throughout the 2023–2024 academic year. Components of the day include trivia games, panels of professional and student speakers, hands-on activities, and networking. More information is available on the caucus website at <https://cwstat.org>. ■

Women in | **conference**
Statistics and Data Science | October 25-27, 2023



Travel Awards Available for Women's Conference

Applications due September 6 by 5:00 p.m. ET.

The purpose of this scholarship is to support participation at WSDS by students and early-career professionals. The award may be used to offset the cost of travel and/or registration.

Visit <https://forms.gle/YuQxJinDnSf78N8n9> for details.

FLORENCE NIGHTINGALE DAY

Encourages Students to Pursue Statistics, Data Science

Shili Lin



Florence Nightingale was a pioneer in data visualization and the founder of modern nursing. As the creator of the pie chart used universally in data visualization to this day, she used data in a novel and effective way to provide better care for wounded soldiers in the Crimean War and improve public health more broadly.

To honor Nightingale's legacy, Florence Nightingale Day was launched in 2018 to engage students, promote future career opportunities in statistics and data science, and celebrate the contributions of women to these fields. The fifth annual celebration spanned six months (October 2022 – April 2023) and took place across the following sites in the US and Canada:

- **October 22, 2022:** Harvard University, Cambridge, Massachusetts
- **October 29, 2022:** The Ohio State University, Columbus, Ohio; The University of Texas at Dallas, Richardson, Texas (virtual cohost)
- **February 3, 2023:** Canadian Statistical Sciences Institute and Simon Fraser University, Burnaby, British Columbia, Canada
- **February 18, 2023:** Canadian Statistical Sciences Institute Ontario and the University of Toronto, Ontario, Canada
- **April 22, 2023:** Wake Forest University, Winston-Salem, North Carolina

Pre-college students (ages 13 and above) from around the world attended these events either in person at one of the sites or virtually through the Ohio State University/University of Texas event. They participated in hands-on activities



Florence Nightingale
Photo/Getty Images

and engaged with professional career and student panels focusing on varied themes. Learn more about the activities at each site at <https://fndaystats.org/5th-fn-day>.

The Florence Nightingale Day for Statistics and Data Science is a nonprofit 501(c)(3) organization that works with its partners and sponsors to expand the event to sites around the globe. Visit <https://fndaystats.org> to learn about hosting an event. ■

MORE ONLINE

Learn about Florence Nightingale Day and how you can get involved at <https://bit.ly/3XQcPzF>.

Meet Bureau of Economic Analysis Director Vipin Arora

Amstat News invited Vipin Arora to respond to the following questions—following a tradition of doing so with all federal statistical agency heads going back to 2011—so readers can learn more about him. Look for other statistical agency head interviews in past and forthcoming issues.



Vipin Arora

Vipin Arora became director of the Bureau of Economic Analysis in December of 2022. Previously, he served as the deputy director of the National Science Foundation's National Center for Science and Engineering Statistics, a macroeconomic analysis team lead for the US Energy Information Administration, an intelligence officer for the US Army, and an analyst for the US Government Accountability Office. Arora earned a PhD in economics from the Australian National University, a master's degree in public administration from Syracuse University, and a bachelor's degree in chemical engineering from the University of Illinois.

MORE ONLINE
Learn about BEA's history and role in America. Read records going back to its founding: <https://bit.ly/3rudMRO>.

What about this position appealed to you?

My mother always told me it's not what you do—it's who you work with. And, at BEA, the staff are undoubtedly among the best at what they do. I've also found them to be endlessly interesting, very friendly, and a lot of fun.

I was also aware that BEA has a storied history of impact and innovation. From our founding within the Department of the Treasury back in 1820 through the COVID-19 pandemic, the bureau has always delivered for America. That legacy—and the possibility of adding to it—also drew me here.

Finally, I really enjoy economics. I can't imagine there is a better place in the world to work on economic issues.

As several people have told me: "Congratulations, you now have the best job in the federal government."

Describe the top 2–3 priorities you have for the Bureau of Economic Analysis.

Providing trusted and innovative economic statistics that keep pace with the global economy and the changing needs of the American people.

There is a lot packed into that sentence—and all of it is really hard. Yet, I have no doubt we will deliver.

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

Ensuring that we remain a healthy organization in the

post-pandemic work environment. I would argue this is a challenge for every organization, not just BEA. While there are many approaches to solving this challenge, I am particularly focused on two.

The first is to improve workload sustainability. Many of us have concerns about post-pandemic workloads, especially as we deliver higher-quality economic data to the public. BEA has been striving to improve sustainability over the last few years, and I am confident we are making progress.

Deepening connections—internally and externally—in the hybrid work environment is also critical. We've gone through a lot of change in recent years and my sense is that most organizations are still learning how best

At the end of the day, that is why we exist—to provide the American public trusted, relevant, and innovative economic information.

to navigate these changes. At BEA, we are actively maximizing opportunities to interact so we intentionally build relationships and trust. Again, I am confident we are making progress.

What kind of support from the statistical community are you looking for?

Feedback, feedback, and more feedback. The needs of our users can change quickly. Stakeholder feedback is critical for us to understand the evolution of those needs—and, ultimately, to respond.

Of course, we also love it when people use our data, research, and analyses. At the end of the day, that is why we exist—to provide the American public trusted, relevant, and innovative economic information.

Finally, we value your support in highlighting the importance of what we do. I believe BEA statistics are critical to the functioning of the American economy. Your vocal support can help others understand that as well.

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

People who come to work for BEA tend to stay at BEA. I've met more than a few people who have worked here more than 40 years, many who have worked here more than 30 years, and several who have worked here more than 10 years and still describe themselves as 'newbies.' In the modern era, that is nothing short of remarkable.

I think there are many factors that contribute to such longevity. A handful that come to mind are the importance and magnitude of our mission, our commitment and desire to serve the public, and the professionalism and integrity of our team. In my view, however, the largest draw is the magic that combines these factors: the BEA culture. People choose to spend their career at BEA because they love the culture.

I'll leave you with one other remarkable accomplishment: Since March of 2020, we have had more than 230 economic news releases, and every single one has been on time. ■



PRACTICAL SIGNIFICANCE
AMERICAN STATISTICAL ASSOCIATION

Tune In

to the latest episode of the *Practical Significance* podcast with hosts Ron Wasserstein and Donna LaLonde



Ron Wasserstein



Donna LaLonde

Practical Significance inspires listeners with compelling stories from statistics and propels data-driven careers forward with learning opportunities for all.

Listen in

via *Amstat News*

<https://magazine.amstat.org/podcast-2>



Insights from Program Officers, Awardee on Funding and Research Strategies

To strengthen the connection between the statistical community and National Science Foundation, we continue the series introduced in the May 2023 issue of Amstat News 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.

NSF Statistics Program Directors

MORE ONLINE
Read about the NSF program directors at <https://bit.ly/3Ods3LT>.

Yulia Gel, Edsel Peña, Yong Zeng, and Jun Zhu collectively responded to the following questions:

When a proposal is declined for funding, is the principal investigator (PI) allowed to submit a revised proposal?

A declined proposal may be resubmitted, but only after it has undergone substantial revision.

NSF programs that accept proposals at any time may have established guidelines in which a declined proposal (or reasonable facsimile of that proposal/topic by the same PI and co-PIs, where applicable) is ineligible for resubmission for a specified period. This moratorium allows PIs/co-PIs sufficient time to digest the results of the merit review and revise/restructure the declined proposal accordingly.

A proposal the program considers too similar to a previous proposal under the moratorium

period may be returned without review. A resubmitted proposal that has not clearly taken into account the major comments or concerns resulting from the prior NSF review may be returned without review. The foundation will treat the revised proposal as a new proposal, subject to the standard review procedures.

What is the difference between a standard award and a continuing award?

For standard grants, NSF agrees to provide a specific level of support for a specified period with no statement of the NSF's intent to provide additional future support without submission of another proposal (see NSF *Proposal and Award Policies and Procedures Guide*, Page xiv).

On the other hand, continuing grants are those for which NSF agrees to provide a specific level of support for a specified period of time—usually a year—with

a statement of intent to provide additional support of the project for additional periods, provided funds are available and the results achieved warrant further support (see NSF *Proposal and Award Policies and Procedures Guide*, Page xiv).

In both award instruments, the PI is *required* to submit annual progress reports. For continuing grants, the assessment of whether the “results achieved warrant further support” are based on these reports. The continuing grant increment—the funds for the next funding period for a continuing grant—is released by the cognizant program officer upon approval of the annual report.

NSF program officers decide the type of award instrument to use, whether standard or continuing, based on considerations such as the career stage of the PI and the funds available for the program.

See also Chapter VI of the NSF *Proposal and Award Policies and Procedures Guide*.

NSF Awardee



Mikyoung Jun, professor of mathematics and ConocoPhillips Data Science Professor at the University of Houston, is the PI on an NSF grant from the Division of Information and Intelligent Systems in the NSF Directorate for Computer and Information Science and Engineering. Her program supports multi-institutional efforts to provide data science training for the future energy industry workforce in the greater Houston area consistent with a transition to a more sustainable and cleaner environment.

From 2005–2020, Jun was a professor in the department of statistics at Texas A&M University. She earned a BS and PhD in statistics from Seoul National University and The University of Chicago, respectively. Jun has a history of research funding support from the National Science Foundation as a PI and co-PI, though this is her first grant for training.

How will the funding be used?

The program consists of year-long training components for undergraduate and master's students with no prerequisites. It includes a summer boot camp, team research projects, and a summer internship. The University of Houston main campus leads the effort, with UH downtown, UH Victoria, UH Clear Lake, and Sam Houston State University following. We have various energy industry partners providing seminars, career advice, and data sets for research projects. The grant is \$1.5 million for three years, and a large portion of that is for students' stipends.

Summarize what the project will accomplish.

The project will produce work-force-ready data scientists with the right skill sets for the energy industry to facilitate energy transition in the region and across the nation. Given the emphasis of the

participating universities in diversity and equity, the proposed program will provide opportunities for minorities and underrepresented groups. Developed education materials will be made public and be freely available. Results of student team projects will be useful for the energy industry and broader community dealing with similar data structures. Selected student teams from the research project will present their results at conferences for further dissemination.

If an NSF non-DMS entity partially or fully funded the award, please describe your approach to that entity so others might learn from it.

This project belongs to NSF's Harnessing the Data Revolution Big Ideas program, which is a joint program with entities such as the following:

- Division of Mathematical Sciences in the Directorate for Mathematical and Physical Sciences
- Division of Information and Intelligent Systems in the Directorate for Computer and Information Science and Engineering
- Division of Social and Economic Sciences in the Directorate for Social, Behavioral, and Economic Sciences

- Office of Polar Programs in the Directorate for Geosciences
- Division of Undergraduate Education, Directorate for STEM Education
- Division of Civil, Mechanical, and Manufacturing Innovation, Directorate for Engineering

Our project covers a wide range of fields, including statistics/mathematics, computer science and engineering, geoscience, and public policy. The diverse expertise of the personnel leading our project aligns well with the Harnessing the Data Revolution vision of NSF.

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

First, read the NSF solicitation carefully and make sure you are addressing all the important components in the program. Second, talk to the program officers whenever you have an opportunity and discuss your ideas with them. If multiple institutions are involved, start early in terms of budget and other arrangements, as each institution may work differently and there is a universal problem of not enough staff that may result in delays. ■

2022 Audit Report for the American Statistical Association

American Statistical Association

Financial Report
December 31, 2022

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Independent Auditor's Report

Board of Directors
American Statistical Association

Opinion

We have audited the financial statements of American Statistical Association (the Association), which comprise the statements of financial position as of December 31, 2022 and 2021, the related statements of activities and cash flows for the years then ended, and the related notes to the financial statements.

In our opinion, the accompanying financial statements present fairly, in all material respects, the financial position of American Statistical Association as of December 31, 2022 and 2021, and the changes in its net assets and its cash flows for the years then ended in accordance with accounting principles generally accepted in the United States of America.

Basis for Opinion

We conducted our audits in accordance with auditing standards generally accepted in the United States of America (GAAS). Our responsibilities under those standards are further described in the Auditor's Responsibilities for the Audit of Financial Statements section of our report. We are required to be independent of the Association and to meet our other ethical responsibilities, in accordance with the relevant ethical requirements relating to our audits. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

Responsibilities of Management for the Financial Statements

Management is responsible for the preparation and fair presentation of these financial statements in accordance with accounting principles generally accepted in the United States of America, and for the design, implementation and maintenance of internal control relevant to the preparation and fair presentation of financial statements that are free from material misstatement, whether due to fraud or error.

In preparing the financial statements, management is required to evaluate whether there are conditions or events, considered in the aggregate, that raise substantial doubt about the Association's ability to continue as a going concern within one year after the date that the financial statements are issued or available to be issued.

Auditor's Responsibilities for the Audit of the Financial Statements

Our objectives are to obtain reasonable assurance about whether the financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditor's report that includes our opinion. Reasonable assurance is a high level of assurance but is not absolute assurance and therefore is not a guarantee that an audit conducted in accordance with GAAS will always detect a material misstatement when it exists. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control. Misstatements are considered material if there is a substantial likelihood that, individually or in the aggregate, they would influence the judgment made by a reasonable user based on the financial statements.

THE POWER OF BEING UNDERSTOOD
AUDIT | TAX | CONSULTING

1

In performing an audit in accordance with GAAS, we:

- Exercise professional judgment and maintain professional skepticism throughout the audit.
- Identify and assess the risks of material misstatement of the financial statements, whether due to fraud or error, and design and perform audit procedures responsive to those risks. Such procedures include examining, on a test basis, evidence regarding the amounts and disclosures in the financial statements.
- Obtain an understanding of internal control relevant to the audit in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the Association's internal control. Accordingly, no such opinion is expressed.
- Evaluate the appropriateness of accounting policies used and the reasonableness of significant accounting estimates made by management, as well as evaluate the overall presentation of the financial statements.
- Conclude whether, in our judgment, there are conditions or events, considered in the aggregate, that raise substantial doubt about the Association's ability to continue as a going concern for a reasonable period of time.

We are required to communicate with those charged with governance regarding among other matters, the planned scope and timing of the audit, significant audit findings and certain internal control-related matters that we identified during the audit.

RSM US LLP

McLean, Virginia
July 5, 2023

2

American Statistical Association

Statements of Financial Position
December 31, 2022 and 2021

	2022	2021
Assets		
Cash and cash equivalents	\$ 247,090	\$ 375,301
Investments	16,772,476	21,408,419
Accounts receivable, net	906,000	533,613
Prepaid expenses	338,794	578,373
Equity in joint venture	147,157	101,985
Property and equipment, net	4,928,171	5,421,833
Investments restricted for endowment	1,457,256	1,677,939
Total assets	\$ 24,796,944	\$ 30,097,233
Liabilities and Net Assets		
Liabilities:		
Accounts payable and accrued expenses	\$ 935,246	\$ 1,016,812
Due to joint venture	202,507	153,715
Deferred revenue	2,104,471	1,841,272
Bonds payable, net	2,204,593	2,570,104
Total liabilities	5,446,817	5,581,903
Commitments and contingencies (Note 11)		
Net assets:		
Without donor restrictions	17,249,698	22,125,533
With donor restrictions	2,100,429	2,389,707
Total net assets	19,350,127	24,515,240
Total liabilities and net assets	\$ 24,796,944	\$ 30,097,233

See notes to financial statements.

3

American Statistical Association

Statements of Activities
Years Ended December 31, 2022 and 2021

	2022			2021		
	Without Donor Restrictions	With Donor Restrictions	Total	Without Donor Restrictions	With Donor Restrictions	Total
Revenue and support						
Meeting registration and exhibits	\$ 3,409,860	\$ -	\$ 3,409,860	\$ 2,491,527	\$ -	\$ 2,491,527
Membership dues	1,866,462	-	1,866,462	1,861,263	-	1,861,263
Royalties	1,918,619	-	1,918,619	1,442,470	-	1,442,470
Advertising	887,373	-	887,373	816,524	-	816,524
Contributions and sponsorships	826,650	142,879	969,529	454,662	110,389	565,051
Federal grants	524,643	-	524,643	203,650	-	203,650
Sales	185,228	-	185,228	77,379	-	77,379
Sections	142,246	-	142,246	309,948	-	309,948
Maintenance fees	79,745	-	79,745	95,748	-	95,748
Miscellaneous	47,202	-	47,202	1,627	-	1,627
Accreditation	24,660	-	24,660	28,518	-	28,518
Page charges	2,680	-	2,680	7,040	-	7,040
Subscriptions	50	-	50	1,265	-	1,265
Net assets released from restrictions	39,884	(39,884)	-	50,883	(50,883)	-
Total revenue and support	9,624,994	102,895	9,727,889	7,836,607	60,105	7,896,712
Expenses:						
Program services:						
Meetings	2,738,464	-	2,738,464	1,213,419	-	1,213,419
Programs	2,438,935	-	2,438,935	2,362,812	-	2,362,812
Publications	1,164,855	-	1,164,855	1,050,088	-	1,050,088
Section expenses	1,079,466	-	1,079,466	753,704	-	753,704
Grants and awards	426,320	-	426,320	168,057	-	168,057
Education	311,530	-	311,530	218,959	-	218,959
Total program services	8,229,568	-	8,229,568	5,768,039	-	5,768,039
Supporting services:						
Management and general	1,912,135	-	1,912,135	1,588,465	-	1,588,465
Membership development	908,691	-	908,691	887,168	-	887,168
Fundraising	223,195	-	223,195	188,192	-	188,192
Total supporting services	2,843,921	-	2,843,921	2,663,825	-	2,663,825
Total expenses	10,923,489	-	10,923,489	8,431,864	-	8,431,864
Change in net assets before other (disa) income	(1,898,495)	102,895	(1,795,600)	(579,487)	60,105	(519,382)
Gain on sale of parking lot	487,171	-	487,171	-	-	487,171
Investment (disa) income, net of fees	(3,664,151)	(391,973)	(4,056,124)	1,848,733	200,022	2,048,755
Change in net assets	(4,075,475)	(289,078)	(4,364,553)	1,269,246	260,127	1,529,373
Net assets:						
Beginning	22,126,633	2,389,707	24,516,340	20,856,287	2,129,070	23,985,357
Ending	\$ 17,249,698	\$ 2,100,429	\$ 19,350,127	\$ 22,125,533	\$ 2,389,707	\$ 24,515,240

See notes to financial statements.

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American Statistical Association

Statements of Cash Flows
Years Ended December 31, 2022 and 2021

	2022	2021
Cash flows from operating activities:		
Change in net assets	\$ (5,165,113)	\$ 1,529,874
Adjustments to reconcile change in net assets to net cash (used) in provided by operating activities:		
Depreciation and amortization	353,019	296,108
Amortization of bond issuance costs	6,637	6,637
Equity in earnings from joint venture	(45,172)	(26,354)
Contributions and realized loss (gain) on investments	(91,069)	(55,879)
Unrealized and realized loss (gain) on investments	4,436,362	(1,087,737)
Gain on the sale of parking lot	(487,171)	-
Changes in assets and liabilities:		
(Increase) decrease in:		
Accounts receivable	(372,387)	(42,572)
Prepaid expenses	239,579	(246,964)
Accounts payable and accrued expenses	(81,566)	37,816
Due to joint venture	48,792	64,487
Deferred revenue	263,199	(396,329)
Net cash (used in) provided by operating activities	(854,890)	73,237
Cash flows from investing activities:		
Purchases of investments	(530,735)	(28,066,317)
Proceeds from sale of investments	1,050,969	27,604,916
Purchases of property and equipment	(186,257)	-
Proceeds from the sale of parking lot	813,871	-
Net cash provided by (used in) investing activities	1,047,848	(461,329)
Cash flows from financing activities:		
Principal payment on bonds payable	(372,238)	(362,152)
Contributions restricted for investment in perpetuity	81,069	55,879
Net cash used in financing activities	(291,169)	(306,273)
Net decrease in cash and cash equivalents	(128,211)	(688,585)
Cash and cash equivalents:		
Beginning	375,301	1,063,886
Ending	\$ 247,090	\$ 375,301
Supplemental disclosures of cash flow information:		
Income taxes paid	\$ 287,455	\$ 45,250
Interest paid	\$ 75,281	\$ 102,728

See notes to financial statements.

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American Statistical Association
Notes to Financial Statements
<p>Note 1. Nature of Activities and Significant Accounting Policies</p> <p>Nature of activities: The American Statistical Association (the Association) was founded in 1839 and incorporated in 1841 under the not-for-profit laws of the Commonwealth of Massachusetts as a professional association serving statisticians and all individuals interested in the study and/or application of statistics. The Association's objectives are to foster statistics and its applications, to promote unity and effectiveness of effort among all concerned with statistical problems, and to increase the contribution of statistics to human welfare. The Association conducts meetings, produces publications devoted to statistical methodology and its applications, makes available information concerning the science of statistics and its contributions, cooperates with organizations in the advancement of statistics, stimulates research, promotes high professional standards and integrity in the application of statistics to problems of science and of public policy, fosters education in statistics, and, in general, makes statistics of service to science and society.</p> <p>A description of the Association's programs and supporting services is as follows:</p> <p>Meetings: The Association provides for various meetings and workshops that serve as a forum for the latest developments in statistical theory and application. These meetings offer a concentrated opportunity for the exchange of ideas and discussion of research findings among colleagues.</p> <p>Programs: Various projects undertaken to further statistics among the public. This includes expenses for various awards presented, which increase the visibility of statistics and its methods with the general public, including science policy, various statistical outreach programs, a public awareness campaign, and online job advertising for statistics positions.</p> <p>Publications: The Association's journals have a worldwide reputation for scientific excellence and are a major asset of the association. The rapid proliferation of journals makes it especially important to maintain their quality and reputation. The Association ensures that its range of publications serves the diverse needs of all of its members. Electronic access for members to ASA journals is a valuable benefit.</p> <p>Section expenses: Represent the Association's organization in groups by professional subject matter. These sections facilitate professional interchanges and research opportunities in statistics.</p> <p>Grants and awards: Represent expenses related to providing advice and technical assistance, which enhance statistical education through the support of federal, state, and local government agencies.</p> <p>Education: The Association offers a wide range of continuing education opportunities, which represent a forum for emerging statistics research. These programs include workshops, lectures, and expenses related to the production and sale of educational materials. Additionally, the Association advocates and provides materials for statistics education at the K-12, community college undergraduate, and graduate levels, and provides leadership in the education community about statistics and data science.</p>
6

American Statistical Association
Notes to Financial Statements
<p>Note 1. Nature of Activities and Significant Accounting Policies (Continued)</p> <p>A summary of the Association's significant accounting policies follows:</p> <p>Basic of presentation: The Association is required to report information regarding its financial position and activities according to two classes of net assets: net assets without donor restrictions and net assets with donor restrictions.</p> <p>Without donor restrictions: Net assets without donor restrictions include those net assets whose use is not restricted by donors, even though their use may be limited in other respects, such as by board designation. See Note 7 for details on board-designated net assets.</p> <p>With donor restrictions: Net assets with donor restrictions include those net assets whose use is subject to donor-imposed restrictions. Donor restrictions may be for a specified time or purpose limitation or the donor may specify that the corpus of their original and certain subsequent gifts are to be maintained in perpetuity. Donor-imposed restrictions are released when a restriction expires, that is, when the stipulated time has elapsed, when the stipulated purpose for which the resource was restricted has been fulfilled, or both. See Notes 8 and 9 for details on net assets with donor restrictions.</p> <p>Cash and cash equivalents: For purposes of reporting cash flows, the Association considers all highly liquid investments purchased with a maturity of three months or less to be cash or cash equivalents, excluding cash held by the investment custodian. Cash and cash equivalents also include funds held in a bank account on behalf of a joint venture.</p> <p>Financial risk: The Association maintains its cash in bank deposit accounts which, at times, may exceed federally-insured limits. The Association has not experienced any losses in such accounts. The Association believes it is not exposed to any significant financial risk on cash.</p> <p>The Association invests in a professionally managed portfolio that contains fixed income and equity mutual funds and common stocks. Such investments are exposed to various risks, such as market and credit. Due to the level of risk associated with such investments and the level of uncertainty related to changes in the value of such investments, it is at least reasonably possible that changes in risk in the near-term could materially affect investment balances and the amounts reported in the financial statements.</p> <p>Accounts receivable: Accounts receivable consist of amounts due from the sale of subscriptions, publications, advertising and conferences. Accounts receivable are presented net of an allowance for doubtful accounts. The allowance for doubtful accounts is provided based upon management's judgment, including such factors as prior collection history and type of receivable. As of both December 31, 2022 and 2021, the allowance for doubtful accounts was \$8,598. The Association writes-off receivables when they become uncollectible, and payments subsequently received on such receivables are credited to the allowance for doubtful accounts.</p> <p>Equity in joint venture: The Association has an investment in a joint venture to produce a journal called <i>Technometrics</i>. The Association accounts for its investment using the equity method due to its lack of control over the joint venture. Under the equity method, the original investment is recorded at cost and adjusted by the Association's share of undistributed earnings or losses of the joint venture. There were no distributions made during the years ended December 31, 2022 and 2021.</p> <p>Investments: Investments with readily determinable fair values are reflected at fair value. The change in fair value of these investments is recorded as a component of investment (loss) income in the statements of activities.</p>
7

American Statistical Association
Notes to Financial Statements
<p>Note 1. Nature of Activities and Significant Accounting Policies (Continued)</p> <p>Property and equipment: Property and equipment are stated at cost and depreciated on a straight-line basis over the estimated useful lives of the assets: 30 years for the building and improvements and three to five years for furniture and fixtures, equipment, and software. The Association capitalizes all property and equipment purchased with the cost of \$5,000 or more.</p> <p>Valuation of long-lived assets: Long-lived assets and certain identifiable intangible assets are reviewed for impairment whenever events or changes in circumstances indicate that the carrying amount of an asset may not be recoverable. Recoverability of the long-lived asset is measured by a comparison of the carrying amount of the asset to future undiscounted net cash flows expected to be generated by the asset. If such assets are considered to be impaired, the impairment to be recognized is measured by the amount by which the carrying amount of the assets exceeds the estimated fair value of the assets. Assets to be disposed of are reportable at the lower of the carrying amount or fair value, less costs to sell.</p> <p>Meeting registration and exhibits: Meeting registration and exhibitor fees are recognized over the time that the related meeting takes place. Registration and exhibitor fees are generally collected in advance of the conference and recorded as deferred revenue until the conference occurs.</p> <p>Membership dues: Membership dues are recognized in the period to which they apply. The membership period is 12 months beginning the month paid or the member's renewal date, whichever is later. Member benefits include access to <i>Amstat News</i> and <i>Significance</i>, career resources including ASA JobWeb, online access to ASA Journals and <i>JSM Proceedings</i>, and ASA eNews. All member benefits are considered one performance obligation and revenue is recognized ratably over the 12-month membership period as the delivery of the member benefit is provided. The monthly derived value provided to the member is the specific output used by the Association to determine that the performance obligation has been satisfied.</p> <p>Royalties: The Association has an agreement with a third-party vendor to manage the sales of its publications. The Association recognizes revenue at the point in time the publication is sold and the respective royalty is earned.</p> <p>Advertising: Revenue is recognized at the point in time that the magazine or other periodical containing the advertisement is published. Amounts received in advance of the advertisement being published are recorded as deferred revenue. The derived value provided by the advertisement being published is the specific output used by the Association to determine that the performance obligation has been satisfied.</p> <p>Except for royalties and advertising, all of the Association's revenue from contracts with customers are from performance obligations satisfied over time and is derived from contracts with an initial expected duration of generally one year or less. Prices are specific to a distinct performance obligation and do not consist of multiple transactions.</p> <p>Economic factors driven by consumer confidence, employment, inflation, and other world events impact the timing and level of cash received and revenue recognized by the Association. Periods of economic downturn resulting from any of the above factors may result in declines in future cash flows and recognized revenue of the Association.</p> <p>Deferred revenue: The Association records deferred revenue in situations when amounts are paid in advance of the Association, satisfying the applicable revenue recognition criteria. Such revenue is recognized when all criteria are subsequently satisfied. There were no changes in membership dues, meeting registration and exhibits, royalties and advertising that would affect the economic seasonality of the statements of financial position.</p>
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Notes to Financial Statements												
<p>Note 1. Nature of Activities and Significant Accounting Policies (Continued)</p> <p>Contract balances: The timing of revenue recognition may not align with the right to invoice. The Association records accounts receivable when it has the unconditional right to issue an invoice and receive payments, regardless of whether revenue has been recognized. If revenue has not yet been recognized, a contract liability (deferred revenue) also is recorded. If revenue is recognized in advance of the right to invoice, a contract asset (unbilled revenue) is recorded. Opening balances and ending balances relating to exchange transactions, were as follows:</p> <table border="1"> <thead> <tr> <th></th> <th>Balance January 1, 2021</th> <th>Balance December 31, 2021</th> <th>Balance December 31, 2022</th> </tr> </thead> <tbody> <tr> <td>Accounts receivable, net</td> <td>\$ 396,772</td> <td>\$ 381,889</td> <td>\$ 631,367</td> </tr> <tr> <td>Deferred revenue</td> <td>1,885,693</td> <td>1,634,556</td> <td>1,819,920</td> </tr> </tbody> </table> <p>Contributions and grants: Unconditional contributions are recorded as with donor restrictions or without donor restrictions depending upon the existence and/or nature of any donor intent. Support that is not restricted by the donor is reported as an increase in net assets without donor restrictions. Donor-restricted support is reported as an increase in net assets with donor restrictions and then reclassified to net assets without donor restrictions when the restriction expires.</p> <p>Federal grants and private grants are considered conditional contributions if the agreements contain a right of return and a donor-imposed barrier. The recognition of conditional grant revenue is deferred until barriers imposed under the grant documents are met by the Association. Conditional grants are recognized to net assets without donor restrictions if at the time conditions have been met, no restrictions remain. As of December 31, 2022, there were conditional promises to give of \$109,632 related to private grants and \$534,644 related to federal grants. As of December 31, 2021, there were conditional promises to give of \$223,839 related to private grants and \$386,389 related to federal grants. The conditional grants each have barriers that relate to limited discretion over expenditures. A refundable advance of \$284,551 and \$206,716 is included within deferred revenue as of December 31, 2022 and 2021, respectively, related to the private grants. The federal grants are paid on a cost-reimbursement basis.</p> <p>Functional allocation of expenses: The costs of providing various programs and supporting services have been summarized on a functional basis in the statements of activities. Note 12 to the financial statements summarizes the Association's allocation methods and presents schedules of expenses by both nature and function for 2022 and 2021.</p> <p>Adopted accounting pronouncements: In February 2016, the Financial Accounting Standards Board (FASB) issued Accounting Standards Update (ASU) 2016-02, <i>Leases</i> (Topic 842). The guidance in this ASU supersedes the leasing guidance in Topic 840, <i>Leases</i>. Under the new guidance, lessees are required to recognize lease assets and lease liabilities on the balance sheet for all leases with terms longer than 12 months. Leases will be classified as either finance or operating with classification affecting the pattern of expense recognition in the statement of activities. The new standard is effective for the year ended December 31, 2022. A modified retrospective transition approach is required for lessees for capital and operating leases existing at, or entered into after, the beginning of the earliest comparative period presented in the financial statements, with certain practical expedients available. The Association had no operating or financing leases meeting that criteria of Topic 842 as of December 31, 2022.</p>		Balance January 1, 2021	Balance December 31, 2021	Balance December 31, 2022	Accounts receivable, net	\$ 396,772	\$ 381,889	\$ 631,367	Deferred revenue	1,885,693	1,634,556	1,819,920
	Balance January 1, 2021	Balance December 31, 2021	Balance December 31, 2022									
Accounts receivable, net	\$ 396,772	\$ 381,889	\$ 631,367									
Deferred revenue	1,885,693	1,634,556	1,819,920									
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Notes to Financial Statements
<p>Note 1. Nature of Activities and Significant Accounting Policies (Continued)</p> <p>In September 2020, the FASB issued ASU 2020-07, <i>Not-for-Profit Entities</i> (Topic 958): <i>Presentation and Disclosures by Not-for-Profit Entities for Contributed Nonfinancial Assets</i>. This ASU requires a not-for-profit entity to present contributed nonfinancial assets in the statement of activities as a line item that is separate from contributions of cash or other financial assets. A not-for-profit entity also is required to disclose contributed nonfinancial assets received disaggregated by category that depicts the type of contributed nonfinancial assets. The term nonfinancial asset includes fixed assets, use of fixed assets or utilities and materials and supplies, intangible assets, services and unconditional promises of those assets. The ASU will be applied on a retrospective basis. This standard is effective for the year ended December 31, 2022. The Association has no contributions of financial assets during the year ended December 31, 2022.</p> <p>Income taxes: The Association is generally exempt from Federal income taxes under the provisions of Section 501(c)(3) of the Internal Revenue Code (IRC). In addition, the Association has been classified as an organization that is not a private foundation under Section 509(a)(2) of the IRC. However, the Association is required to report unrelated business income to the Internal Revenue Service and the state of Virginia, as well as pay certain other taxes to local jurisdictions. The Association incurred approximately \$126,000 and \$161,000 in income tax expense on unrelated business income net income earned on advertising sales for the years ended December 31, 2022 and 2021, respectively.</p> <p>Use of estimates: The preparation of financial statements in conformity with generally accepted accounting principles (U.S. GAAP) requires management to make estimates and assumptions that affect the amounts reported in the financial statements and accompanying notes. Actual results could differ from those estimates.</p> <p>Subsequent events: The Association has evaluated subsequent events through July 5, 2023, the date on which the financial statements were available to be issued.</p> <p>Note 2. Investments and Fair Value Measurements</p> <p>The Association has implemented the accounting standards topic regarding fair value measurements which establishes a framework for measuring fair value in accordance with U.S. GAAP and expands disclosures about fair value measurements. This standard uses the following prioritized input levels to measure fair value. The input levels used for valuing investments are not necessarily an indication of risk.</p> <p>Level 1: Observable inputs that reflect quoted prices for identical assets or liabilities in active markets, such as stock quotes.</p> <p>Level 2: Includes inputs other than Level 1 that are directly or indirectly observable in the marketplace, such as yield curves or other market data.</p> <p>Level 3: Unobservable inputs which reflect the reporting entity's assessment of the assumptions that market participants would use in pricing the asset or liability, including assumptions about risk such as, bid/ask spreads and liquidity discounts.</p> <p>Investments valued using Level 1 inputs include mutual funds, the fair value for which were based on quoted prices for identical assets in active markets. Investments valued using Level 2 inputs include corporate and government bonds, which were based on the fair values of the underlying investments as determined by the fund managers. Management believes the fund managers' estimates to be reasonable approximations of the fair value of the investments. Investments recorded at cost include cash deposits. Investments at cost are not required to be classified in one of the levels prescribed by the fair value hierarchy.</p>
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Notes to Financial Statements																																																															
<p>Note 2. Investments and Fair Value Measurements (Continued)</p> <p>The following is a summary of Investments at December 31, 2022 and 2021:</p> <table border="1"> <thead> <tr> <th></th> <th>2022</th> <th>2021</th> </tr> </thead> <tbody> <tr> <td>Investments at fair value:</td> <td></td> <td></td> </tr> <tr> <td>Mutual funds - U.S. equities (Level 1)</td> <td>\$ 7,656,015</td> <td>\$ 10,000,194</td> </tr> <tr> <td>Mutual funds - U.S. fixed income (Level 1)</td> <td>3,918,649</td> <td>4,935,639</td> </tr> <tr> <td>Mutual funds - International equities (Level 1)</td> <td>5,031,717</td> <td>6,182,370</td> </tr> <tr> <td>Mutual funds - International fixed income (Level 1)</td> <td>1,623,351</td> <td>2,068,125</td> </tr> <tr> <td></td> <td>\$ 18,229,732</td> <td>\$ 23,086,328</td> </tr> </tbody> </table> <p>The following reconciles the above investments to the consolidated statement of financial position at December 31, 2022 and 2021:</p> <table border="1"> <thead> <tr> <th></th> <th>2022</th> <th>2021</th> </tr> </thead> <tbody> <tr> <td>Investments</td> <td>\$ 16,772,476</td> <td>\$ 21,408,419</td> </tr> <tr> <td>Investments held for permanent endowment</td> <td>1,457,256</td> <td>1,677,909</td> </tr> <tr> <td></td> <td>\$ 18,229,732</td> <td>\$ 23,086,328</td> </tr> </tbody> </table> <p>Note 3. Property and Equipment</p> <p>Property and equipment consists of the following at December 31, 2022 and 2021:</p> <table border="1"> <thead> <tr> <th></th> <th>2022</th> <th>2021</th> </tr> </thead> <tbody> <tr> <td>Building and improvements</td> <td>\$ 8,541,220</td> <td>\$ 8,541,220</td> </tr> <tr> <td>Furniture and fixtures</td> <td>211,869</td> <td>211,869</td> </tr> <tr> <td>Office equipment</td> <td>74,861</td> <td>74,861</td> </tr> <tr> <td>Software</td> <td>699,029</td> <td>612,773</td> </tr> <tr> <td>Computer equipment</td> <td>70,773</td> <td>70,773</td> </tr> <tr> <td>Land</td> <td>959,300</td> <td>1,286,000</td> </tr> <tr> <td></td> <td>10,557,052</td> <td>10,697,496</td> </tr> <tr> <td>Less accumulated depreciation</td> <td>(5,628,881)</td> <td>(5,275,863)</td> </tr> <tr> <td></td> <td>\$ 4,928,171</td> <td>\$ 5,421,633</td> </tr> </tbody> </table> <p>In July 2020, the Association was approached about selling one of its existing parking lots. In October 2020, the Association entered into an agreement of sale and in December 2020 the buyer provided its feasibility notice to the Association indicating that they intend to proceed to closing. The agreement of sale provides the buyer a 14-month initial entitlement contingency period in order to obtain the necessary entitlements for the development of the property with a right to extend the period for up to 24-months. The sale closed in 2022 and the resulting gain on the sale of the parking lot, totaling \$487,171, is reported in the statement of activities for the year ending December 31, 2022.</p> <p>In September 2021, the Association listed its building located in Alexandria, Virginia for sale or lease. At this time, there have not been any offers and an immediate sale is considered unlikely based on current commercial real estate market conditions. Accordingly, the criteria to consider the building as held for sale as of December 31, 2022 and 2021 has not been met.</p>		2022	2021	Investments at fair value:			Mutual funds - U.S. equities (Level 1)	\$ 7,656,015	\$ 10,000,194	Mutual funds - U.S. fixed income (Level 1)	3,918,649	4,935,639	Mutual funds - International equities (Level 1)	5,031,717	6,182,370	Mutual funds - International fixed income (Level 1)	1,623,351	2,068,125		\$ 18,229,732	\$ 23,086,328		2022	2021	Investments	\$ 16,772,476	\$ 21,408,419	Investments held for permanent endowment	1,457,256	1,677,909		\$ 18,229,732	\$ 23,086,328		2022	2021	Building and improvements	\$ 8,541,220	\$ 8,541,220	Furniture and fixtures	211,869	211,869	Office equipment	74,861	74,861	Software	699,029	612,773	Computer equipment	70,773	70,773	Land	959,300	1,286,000		10,557,052	10,697,496	Less accumulated depreciation	(5,628,881)	(5,275,863)		\$ 4,928,171	\$ 5,421,633
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2022 Audit Report Continued

American Statistical Association
Notes to Financial Statements

Note 4. Joint Venture

The following schedule presents summarized financial information from the joint venture Technometrics, in which the Association has a 60% equity ownership without control as of and for the years ended December 31, 2022 and 2021:

	2022	2021
Condensed income statement:		
Revenues	\$ 134,095	\$ 108,500
Expenses	58,808	64,577
Net income	\$ 75,287	\$ 43,923
Condensed balance sheet:		
Total assets	\$ 258,180	\$ 183,716
Total liabilities	12,918	13,741
Equity	\$ 245,262	\$ 169,975

The Association also has a maintenance agreement with the joint venture in which it provides management and collection services, office space, and editorial and administrative support. Amounts due to the joint venture as of December 31, 2022 and 2021, which were comprised of the joint venture cash held within the Association's cash account, were \$202,507 and \$153,715, respectively. Maintenance agreement revenue under this arrangement earned by the Association was \$38,122 and \$38,739 for the years ended December 31, 2022 and 2021, respectively.

Note 5. Bonds Payable

During the year ended December 31, 2013, the Association issued Revenue Refunding Bonds (the Bonds) for \$5,386,000 with a financial institution, the holder of the Bonds, which have a maturity date of August 1, 2030. The Bonds are callable on May 1, 2028, by the bondholder with 120 days' notice. Interest on the Bonds is calculated at a fixed rate of 3.34% for the years ended December 31, 2022 and 2021. The Bonds are collateralized by the land and building owned by the Association. In connection with the Bonds, the Association must be in compliance with certain specified covenants. At December 31, 2022, the Association was in violation of the debt coverage covenant. Subsequent to year end, the Association received a waiver from the lender related to this specific covenant violation.

Interest expense incurred for the years ended December 31, 2022 and 2021, was \$88,346 and \$100,803, respectively.

Annual principal payments on the bonds at December 31, 2022, are due in future years as follows:

Year	Amount
2023	\$ 382,604
2024	393,260
2025	404,212
2026	415,469
2027	427,039
2028	217,960
	\$ 2,240,544

American Statistical Association
Notes to Financial Statements

Note 5. Bonds Payable (Continued)

Bonds are recorded on the statements of financial position net of the unamortized discount and debt issuance costs. Bonds payable consist of the following as of December 31, 2022 and 2021:

	2022	2021
Principal amount	\$ 2,240,544	\$ 2,612,782
Less unamortized debt issuance costs	(35,951)	(42,588)
	\$ 2,204,593	\$ 2,570,194

Note 6. Liquidity

The Association strives to maintain sufficient cash to cover all operating expenditures during its annual business cycle. Cash in excess of amounts needed for operating activities is invested in mutual funds and is available to convert back to cash if needed. While the Association's investments may be quickly converted to cash to cover operating expenditures, the Association does so infrequently. In 2022 and 2021, the Association made transfers of \$1,000,000 and \$500,000, respectively, from its investments to its commercial checking account to cover an expected temporary cash shortfall. The following table reflects the Association's financial assets as of December 31, 2022 and 2021, reduced by amounts that are not available to meet general expenditures due to donor restrictions or internal board designations (see Notes 7, 8 and 9). In the event the need arises to utilize the board-designated funds for liquidity purposes, the reserves could be drawn upon through board resolution.

	2022	2021
Cash and cash equivalents	\$ 247,090	\$ 375,301
Investments	16,772,476	23,086,328
Accounts receivable, net	906,000	533,613
Financial assets available	17,925,566	23,995,242
Less amounts unavailable for general expenditures within one year due to:		
Refundable advances	(284,551)	(206,716)
Donor-imposed restrictions	(2,100,429)	(2,389,707)
Board designations	(1,689,359)	(1,820,575)
Financial assets available to meet cash needs for general expenditures within one year	\$ 13,851,227	\$ 19,578,244

Note 7. Board Designated Net Assets

Board designated net assets represent funds designated by the Board of Directors (the Board). These funds are without donor restrictions and are available for the use of the Association at the direction of the Board. Board designated net assets consisted of the following at December 31, 2022 and 2021:

	2022	2021
Sections	\$ 1,586,432	\$ 1,717,074
Education	102,927	103,501
	\$ 1,689,359	\$ 1,820,575

American Statistical Association
Notes to Financial Statements

Note 8. Net Assets With Donor Restriction

Net assets with donor restrictions consisted of the following at December 31, 2022 and 2021:

	Balance December 31, 2021	Restricted Contributions	Investment Loss	Released	Balance December 31, 2022
Endowment funds	\$ 1,677,909	\$ 91,069	\$ (282,290)	\$ 29,432	\$ 1,457,256
Other funds:					
Cox Scholarship	214,352	150	(35,590)	2,000	176,912
Waksberg Award	118,254	-	(19,539)	2,500	96,215
Bernard Harris Fund	103,713	10,000	(17,597)	-	96,116
Griffin Award	60,851	1,750	(10,022)	3,490	49,109
Way Smith Scholarship Fund	48,692	-	(8,099)	-	40,593
Dixon Award	44,747	-	(7,423)	500	36,824
MG Narella Scholarship Fund	42,225	-	(7,000)	500	34,725
Chambers Award	26,817	-	(4,433)	667	21,717
Student and early career travel	9,718	1,242	-	795	10,165
BIPOC in Stats & Data Science	31,335	33,368	-	-	64,703
Jules Peet Prize	5,000	5,000	-	-	10,000
Alaga Fund	3,992	-	-	-	3,992
Other short-term restricted	2,102	-	-	-	2,102
Pride Scholarship	-	-	-	-	-
Total other funds	711,798	51,510	(109,883)	10,432	643,173
Total	\$ 2,389,707	\$ 142,579	\$ (391,973)	\$ 39,864	\$ 2,100,429

	Balance December 31, 2020	Restricted Contributions	Investment Income	Released	Balance December 31, 2021
Endowment funds	\$ 1,505,500	\$ 55,679	\$ 143,445	\$ 26,715	\$ 1,677,909
Other funds:					
Cox Scholarship	197,310	200	18,842	2,000	214,352
Waksberg Award	112,761	-	10,493	5,000	118,254
Bernard Harris Fund	80,430	15,250	8,033	-	103,713
Griffin Award	54,434	2,800	5,295	1,668	60,851
Way Smith Scholarship Fund	46,325	-	4,367	2,000	48,692
Dixon Award	41,304	-	3,943	500	44,747
MG Narella Scholarship Fund	38,539	-	3,686	-	42,225
Chambers Award	25,389	-	2,428	1,000	26,817
Student and early career travel	8,993	725	-	-	9,718
BIPOC in Stats & Data Science	5,000	26,335	-	-	31,335
Jules Peet Prize	5,000	10,000	-	-	15,000
Alaga Fund	3,992	-	-	-	3,992
Other short-term restricted	2,102	-	-	-	2,102
Pride Scholarship	2,000	-	-	-	2,000
Total other funds	623,579	55,310	57,077	24,168	711,798
Total	\$ 2,129,079	\$ 110,989	\$ 200,522	\$ 50,883	\$ 2,389,707

American Statistical Association
Notes to Financial Statements

Note 9. Endowment

The Association's endowment funds have been established for the purpose of awards and grants supporting education and research in the field of statistics. The Association's policies for making appropriations for expenditures are to follow the directives of the donors and to comply with the regulations in the state laws for endowments. Under U.S. GAAP, net assets associated with endowment funds are classified and reported based on the existence or absence of donor-imposed restrictions.

Though management of the Association has not conducted a formal analysis of its compliance with the Uniform Prudent Management of Institutional Funds Act (UPMIFA) enacted by the Commonwealth of Virginia, it has established policies regarding the preservation, investment and expenditure of permanently restricted net assets. Consistent with U.S. GAAP management believes that funds that are perpetual in nature require the preservation of the fair value of the gifts, and that earnings on those funds should be classified in accordance with the donor's stipulations, if any, as net assets with donor restrictions until the donor stipulation is met.

In accordance with UPMIFA, the Association considers the following factors in making a determination to appropriate or accumulate donor-restricted funds: (1) duration and preservation of the fund; (2) purposes of the Association and the donor-restricted endowment fund; (3) general economic conditions; (4) possible effect of inflation and deflation; (5) expected total return from income and the appreciation or depreciation of investments; (6) other resources of the Association; (7) investment policies of the Association.

The Association has adopted investment and spending policies for endowment assets that attempt to provide a predictable stream of funding to programs supported by its endowment while seeking to maintain purchasing power of the endowment assets. All earnings of the endowment are reflected as net assets with donor restrictions until appropriated for expenditure based on donor restrictions by the various Committees of the Association. The Board has assigned a Committee to each program for the purposes of selecting and recommending individuals for awards or grants.

From time to time, the fair value of assets associated with individual donor-restricted endowment funds may fall below the level that the donor or UPMIFA requires the Association to retain as a fund of perpetual duration. In accordance with U.S. GAAP, there were no deficiencies of this nature that are reported in net assets with donor restrictions as of December 31, 2022 and 2021.

American Statistical Association
Notes to Financial Statements

Note 9. Endowment (Continued)

Endowment net assets consisted of the following at December 31, 2022 and 2021:

	2022		
	With Donor Restrictions		Total
	Subject to Expenditure for Specified Purpose	Endowments Given in Perpetuity	
Noether Memorial	\$ 62,146	\$ 206,506	\$ 268,652
Sirken Award	21,828	150,000	171,828
Youden Award	92,603	61,083	153,686
Deming Lecture Fund	72,190	67,275	139,465
EC Bryant Award	55,506	60,000	115,506
Wilks Memorial	28,564	47,143	75,707
Links Lecture	15,353	62,550	77,903
Walter Fund	13,174	45,000	58,174
Lingzi Lu Award	17,952	41,270	59,222
Karl E. Peace Award	22,376	34,000	56,376
Marquardt Memorial	25,952	26,250	52,202
Lester R. Curtin Award	11,848	25,000	36,848
Bariko Award	6,178	30,000	36,178
Lamb/Ryne	777	44,000	44,777
Pride	3,280	30,000	33,280
Riffenburgh Award	(5,388)	50,000	44,612
David Cox Award	(1,788)	34,628	32,840
	\$ 442,551	\$ 1,014,705	\$ 1,457,256

American Statistical Association
Notes to Financial Statements

Note 9. Endowment (Continued)

	2021		
	With Donor Restrictions		Total
	Subject to Expenditure for Specified Purpose	Endowments Given in Perpetuity	
Noether Memorial	\$ 127,732	\$ 206,506	\$ 334,238
Sirken Award	61,864	150,000	211,864
Youden Award	125,567	61,082	186,649
Deming Lecture Fund	101,165	67,275	168,440
EC Bryant Award	81,429	60,000	141,429
Wilks Memorial	45,970	47,143	93,113
Links Lecture	28,917	62,425	91,342
Walter Fund	27,083	45,000	72,083
Lingzi Lu Award	29,803	41,270	71,073
Karl E. Peace Award	34,774	34,000	68,774
Marquardt Memorial	36,367	26,250	62,617
Lester R. Curtin Award	20,140	25,000	45,140
Bariko Award	13,582	30,000	43,582
Lamb/Ryne	7,435	44,000	51,435
Pride	940	35,190	36,130
	\$ 742,768	\$ 935,141	\$ 1,677,909

For the years ended December 31, 2022 and 2021, the Association had the following endowment-related activities:

	2022		
	With Donor Restrictions		Total
	Subject to Expenditure for Specified Purpose	Endowments Given in Perpetuity	
Endowment assets, December 31, 2021	\$ 742,768	\$ 935,141	\$ 1,677,909
Contributions	11,505	79,564	91,069
Net investment loss	(282,290)	-	(282,290)
Appropriation of endowment assets for expenditure	(29,432)	-	(29,432)
Endowment assets, December 31, 2022	\$ 442,551	\$ 1,014,705	\$ 1,457,256

American Statistical Association
Notes to Financial Statements

Note 9. Endowment (Continued)

	With Donor Restrictions		
	Subject to Specified Purpose	Endowments Given in Perpetuity	Total
Endowment assets, December 31, 2020	\$ 625,098	\$ 880,402	\$ 1,505,500
Contributions	940	54,739	55,679
Net investment income	143,445	-	143,445
Appropriation of endowment assets for expenditure	(26,715)	-	(26,715)
Endowment assets, December 31, 2021	\$ 742,768	\$ 935,141	\$ 1,677,909

Note 10. Retirement Plans

The Association has a 401(k) profit sharing plan and a money purchase plan. Both plans cover substantially all full-time employees from date of hire. Under the terms of the 401(k) profit sharing plan, the Association will match 100% of the participating employee's contributions, up to 3% of the employee's salary. Under the terms of the money purchase plan, the Association contributes 6% of an eligible employee's compensation to the plan. Contributions to the plans were as follows for the years ended December 31, 2022 and 2021:

	2022	2021
Money purchase plan	\$ 208,791	\$ 207,687
401(k) profit sharing plan	96,409	101,810
	\$ 305,200	\$ 309,497

Note 11. Commitments and Contingencies

Hotel space: The Association reserves hotel space for its conventions several years in advance. The contracts stipulate the number of rooms to be reserved and the time period for which they are to be reserved. As of the date of this report, contracts for hotel space had been entered into through 2029. However, due to the numerous variables involved, the Association's potential liability under these contracts cannot be determined.

Legal matters: From time to time, the Association may be subject to various legal proceedings, which are incidental to the ordinary course of business. In the opinion of management, there are no material legal proceedings to which the Association is a party.

Employment agreement: The Association has an employment agreement with its Executive Director, whereby, if the Association were to terminate the agreement without cause, the Association would be required to make certain payments to the Executive Director. The latest extension of the agreement is set to end in August 2024, unless further extended.

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American Statistical Association
Notes to Financial Statements

Note 11. Commitments and Contingencies (Continued)

Federal grants: The Association receives grants from federal agencies. Revenue from such grants is recognized only to the extent of actual grant expenses incurred. Reimbursed costs are subject to audit and final determination of allowability by the federal government. Therefore, there is the possibility that any amount received in excess of allowable costs would be required to be refunded. The Association believes that no material liability would result from such an audit.

Note 12. Expenses by Both Nature and Function

The financial statements report certain categories of expenses that are attributable to one or more program or supporting functions of the Association. Most expenditures of the Association are directly traced to programs and supporting services through a process of coding invoices and expense reports to the appropriate cost centers. Salaries and benefits are similarly traced to programs and supporting service cost centers using a timesheet reporting system. Through these processes, costs that are directly related to a single program or supporting activity are assigned to that program or supporting activity.

Costs related to more than one program or supporting activity, or to a combination of programs and supporting services are allocated among the appropriate functions. Costs and overhead expenses are allocated to the various functions of the organization based on total direct salaries traced to each function. Overhead includes common-use supplies and maintenance, such as copier toner, paper, routine building maintenance, and other costs that benefit all or nearly all programs.

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Notes to Financial Statements

Note 12. Expenses by Both Nature and Function (Continued)

Expenses by both nature and function are as follows for the years ended December 31, 2022 and 2021:

	2022											
	Program Services						Supporting Services					
	Meetings	Programs	Publications	Section Expenses	Grants and Awards	Education	Total Program Services	Management and General	Membership Development	Fundraising	Total Supporting Services	
Salaries and benefits	\$ 771,469	\$ 1,241,053	\$ 428,179	\$ 207,349	\$ 5,644	\$ 99,424	\$ 2,753,118	\$ 1,113,132	\$ 643,764	\$ 166,393	\$ 1,923,289	\$ 4,676,407
Meeting expenses	656,606	172,272	161,083	647,842	26	21,715	1,659,544	54,822	103,492	8,096	166,410	1,825,954
Supplies and equipment	887,931	14,148	918	61,284	-	44,294	1,008,575	12,660	3,933	2,551	19,144	1,027,719
Non-employee compensation	46,394	149,630	171,526	28,656	225,671	184,696	806,573	37,007	36,963	-	73,970	880,543
Overhead and occupancy	102,438	184,178	57,645	26,861	1,346	13,119	385,587	203,051	85,963	22,532	311,546	697,133
Professional services	-	345,720	4,536	-	-	-	350,256	46,238	-	-	46,238	396,494
Travel	63,556	47,461	-	27,413	191,475	6,039	335,944	21,930	757	592	23,279	359,223
Other expense	93,473	154,140	7,719	23,712	2,000	3,868	284,912	2,769	63,215	3,920	69,904	354,816
Taxes and fees	11,995	20,758	133,249	3,158	158	1,572	170,890	20,451	10,205	5,050	35,706	206,596
Printing/publishing	47,684	-	94,880	14,814	-	5,943	163,321	47	3,655	8,006	11,708	175,029
Postage and shipping	56,908	295	95,120	514	-	1,869	154,706	28	6,744	5,965	12,737	167,443
Contributions	-	109,280	-	37,862	-	9,000	156,142	-	-	-	-	156,142
	\$ 2,738,454	\$ 2,438,935	\$ 1,154,855	\$ 1,079,465	\$ 426,320	\$ 391,539	\$ 8,229,568	\$ 1,512,135	\$ 958,691	\$ 223,105	\$ 2,693,031	\$ 10,923,499

	2021											
	Program Services						Supporting Services					
	Meetings	Programs	Publications	Section Expenses	Grants and Awards	Education	Total Program Services	Management and General	Membership Development	Fundraising	Total Supporting Services	
Salaries and benefits	\$ 708,866	\$ 1,338,336	\$ 436,335	\$ 201,596	\$ 5,462	\$ 60,529	\$ 2,751,124	\$ 1,127,760	\$ 595,817	\$ 155,850	\$ 1,879,427	\$ 4,630,551
Meeting expenses	295,264	139,781	127,027	463,244	5	9,467	1,034,788	33,775	70,504	7,797	112,076	1,146,864
Non-employee compensation	14,845	121,949	151,494	22,198	155,403	130,246	596,135	37,898	30,452	-	68,350	664,485
Overhead and occupancy	91,377	187,637	55,853	23,018	409	7,866	366,160	201,085	74,841	-	19,646	541,686
Professional services	-	348,996	4,315	-	-	-	353,311	39,552	-	-	39,552	392,863
Other expense	35,729	127,899	29,999	19,641	1,301	658	215,227	2,298	59,192	1,122	62,612	277,830
Taxes and fees	10,633	20,521	61,891	2,698	47	912	96,502	135,620	8,703	5,013	149,536	246,036
Printing/publishing	24,166	-	112,048	823	-	421	137,456	33	8,497	3,488	12,018	149,474
Postage and shipping	25,726	458	74,116	865	-	1,704	102,869	276	16,096	3,487	19,859	122,728
Contributions	-	61,036	-	9,647	-	5,500	76,183	-	-	-	-	76,183
Supplies and equipment	6,813	2,981	2,212	3,913	-	1,441	17,360	7,717	3,066	1,789	12,572	29,932
Travel	-	3,218	-	6,061	5,430	215	14,924	2,281	-	-	2,281	17,205
	\$ 1,213,419	\$ 2,352,812	\$ 1,055,088	\$ 753,704	\$ 188,057	\$ 218,959	\$ 5,762,039	\$ 1,588,495	\$ 887,168	\$ 198,162	\$ 2,653,855	\$ 8,415,894

STATS4GOOD

United Nations Sustainable Development Goals: A World of Opportunity in Data for Good



David Corliss is the AVP technical expert in data science at General Motors OnStar Insurance. He also serves on the steering committee for the Conference on Statistical Practice and is the founder of Peace-Work.

Each year in April, this column celebrates Earth Day by looking at opportunities for environmental advocacy using statistics and data science. Many of these relate to the United Nations' sustainable development goals (SDGs). However, these goals include much more than the environment. This month, Stats4Good looks at all 17 SDGs, projects, and resources and how to get involved.

Developed in 2015 as part of a broad UN initiative to set long-term goals, the scope of the SDGs is wide. The UN's call to action states the objective to create a "shared blueprint for peace and prosperity for people and the planet, now and into the future." That makes the SDGs much more than development in the traditional sense of the word. They're a pathway and set of resources for all countries—not only developing nations—to create a better, more peaceful, and more sustainable world. As is so often the case in Data for Good, there is a lot of data available and far too few people to do the analysis needed to strengthen the impact.

The UN's website includes information about SDGs as a whole and a page for each goal. Each page describes the individual goal in detail and provides links to actions, events, and resources supporting it. While all 17 goals are interrelated, they can be placed into groups such as initiatives for human well-being, which includes the no poverty, zero hunger, quality education, and good health and well-being goals.

One important area of research right now is the impact of the pandemic on the poorest communities. While efforts to reduce poverty and related

issues have made progress in recent decades, the pandemic caused serious setbacks. It's a good example of how the SDGs address issues affecting all countries, including the US, where the percentage of people below the official poverty line rose from 10.4 percent to 11.7 percent due to the pandemic. The many dimensions of poverty are often neglected problems, underscoring the need for statistical volunteers to get involved.

Another area addressed by the SDGs is environmental advocacy, including goals for climate action—one of the Stats4Good top initiatives for 2023—life below water, life on land, and responsible production and consumption. This is one of the most intersectional areas of the SDGs. For example, 90 percent of people in the global fishing industry work in small and fragile fisheries. That means healthy oceans make for healthy communities, reducing poverty on a global scale.

It's also a topic that can get community leaders to respond: Legislators and others who show little interest in protecting the environment will start listening when the subject becomes sustainable jobs.

Statisticians and data scientists are needed to frame economic arguments for environmental advocacy that have the power to persuade those not already on board.

While economic interests are often seen as contrary to environmental needs, this thinking is a case of the tragedy of the commons, where everyone loses. Accordingly, the SDGs for industry and human activity focus on developing a sustainable economy. The goals include affordable clean energy; decent work and economic

SUSTAINABLE DEVELOPMENT GOALS



United Nations Sustainable Development Goals, www.un.org/sustainabledevelopment
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growth; and industry, innovation, and infrastructure. Statistical science is playing a leading role in developing the economy of the future that really has a future!

The UN has also established SDGs in justice and human rights, including reduced inequalities; gender equality; and peace, justice, and strong institutions. This road map for a sustainable world necessarily involves developing a more just and equitable world for all. Statistical volunteers can make a big impact.

Important areas at this time include the plight of migrants and the record high number of refugees. The pandemic and increasing poverty have affected many long-standing issues. The Russia-Ukraine war is another area in which scientific study is needed. The UN Global Migration Database provides the data needed to support investigation into the impact of the Russia-Ukraine war and other conflicts around the world.

The United Nations SDGs provide direction, resources, and networks needed to address a host of important issues. Every goal and initiative needs statistical support. Statistics is the science all other sciences use, underscoring the

Getting Involved

August is the month for following up on the Joint Statistical Meetings—and this is for everyone, not just those who were able to attend! Use the conference program search engine at <https://bit.ly/43xQtVm> to find information about the projects that interest you most and reach out to authors, panel participants, and course instructors to start planning your next project in Data for Good.

need for local studios, student projects, and statistical support for grant proposals. The UN's SDGs offer a world of opportunity, and each of us can play an important role. ■

Editor's Note: The content of this publication has not been approved by the United Nations and does not reflect the views of the United Nations or its officials or member states.

How to Engage in Self-Care as You Grow as a Statistician

Meg Ruyle, ASA Graphic Designer/Production Coordinator

The Committee on Career Development provides support and information about career decisions to statisticians, from technical skills to networking, communication, and developing an online presence. Three members of the committee offer insight into another critical focus of career development: how to engage in self-care as you grow as a statistician.



Daniel Elchert



Erin Twomey-Wilson



Esther Pearson

Self-care is often thought of as an indulgence or one-time relaxation event. How do you define self-care?

Daniel Elchert: Self-care is an ongoing process of proactively taking care of oneself to improve well-being and resiliency. Your health and well-being are very important!

Erin Twomey-Wilson: I define self-care as taking the time to listen to your body to see what it needs. That could be taking some time to quiet your mind, rest, or get some exercise.

Esther Pearson: Self-care is an ongoing practice. In each phase of a career, you must identify the points of challenge and stress. After identifying the points, you must determine their triggers for you and defend against them. How? I recommend a self-care routine for good physical, mental, and emotional health that includes exercise.

When in your career is it most important to engage in self-care?

Elchert: Self-care is important during every career stage. In my opinion, self-care practice is especially useful during periods of career transition (e.g., after graduating and starting or ending a professional role).

Twomey-Wilson: It is very important to engage in self-care throughout your career. Life can get stressful no matter what stage of your career you are in.

Pearson: It is important in your career to engage in self-care in the beginning, the end, and everything in between. In other words, engaging in self-care is on-going throughout one's career.

How does remote work change the need for a self-care routine?

Elchert: Remote work is increasingly common for statisticians. If

you are working remotely from home, developing a self-care routine may help you set healthy boundaries between when you are working and when you are not working.

Twomey-Wilson: Remote work can allow more time for self-care. Time that would be spent commuting can be used for self-care. You can get in that workout, call a friend, read a book, etc.

Pearson: Remote work allows for relief from travel and traffic hazards. But it can engage reflection on “FOMO,” or “fear of missing out.” So make a concerted effort to keep in touch with your manager and peers at work.

In what ways can self-care affect your mental health?

Elchert: All people experience stress (at least, I do!). Self-care is one tool you can use to effectively respond to life's stressors while promoting your overall health.



Twomey-Wilson: Self-care can clear your mind to give you a chance to figure out problems or just rest.

Pearson: Self-care is not selfishness. It is being selfless. It is caring enough about others to care about yourself. That protects your mental health through cherishing each accomplishment and not just checking off an item completed. Celebrate each accomplishment with self-congratulations. This boosts your mental health.

Why is it important to engage in self-care during a job hunt?

Elchert: Searching for a job oftentimes requires a lot of time and energy. As a result, it is important to engage in self-care during your job search process and show yourself compassion as you look for a professional opportunity.

Twomey-Wilson: Self-care can ease anxiety, help you get more rest, and reduce stress. All of these things can help you think faster and be more confident.

Pearson: Job hunting can be discouraging. So remember the “sales and marketing” axiom: “every ‘no’ is one step closer to a ‘yes.’”

How can self-care help you view career disappointments as feedback, rather than a setback? What would that look like?

Elchert: Everyone encounters disappointments at some point during their career. Self-care can help to relieve stress and replenish your energy levels.

This means when you encounter a challenge, a regular self-care practice can help you respond effectively to difficult feelings like being disappointed.

Twomey-Wilson: This looks like forgiving yourself and ignoring/stopping the negative self-talk. This could be talking to a friend, relative, or therapist.

Pearson: Disappointments can be viewed as “dis” (not) “appointment” (designated assignment). In other words, the job, promotion, or career aspiration that was not obtained was not your designated assignment. Keep looking.

What are some examples of self-care?

Elchert: Self-care can take many forms! I enjoy breaking up my workday by taking short breaks outside. Another self-care practice I enjoy includes turning my phone off in the evenings to set healthy boundaries with work tasks.

Twomey-Wilson: Some examples of self-care are exercising, taking a long bath, going for a walk, meditating, or going to a salon/spa. It can be so many things!

Pearson: Surround yourself with encouraging people. Pessimistic people should be kept at a distance.

What self-care practices would be especially important for someone looking for a job or just beginning a job?

Elchert: Be compassionate and kind to yourself. There is a lot to learn when looking for or starting a new job. It’s okay if you don’t know it all!

Twomey-Wilson: Exercise and get enough sleep. Also, have someone you can talk to throughout the entire process.

Pearson: On your list of to-dos, include: 1) stopping and breathing; 2) looking for the humor in each situation and laughing; and 3) encouraging someone else who is looking for a job or beginning one.

How can you develop a self-care routine when you are busy?

Elchert: Start with a small, realistic goal. For example, start by setting a goal to take a 15-minute break at some point during each workday, such as by calling a friend or stepping outside. When it comes to self-care, no goal is too small!

Twomey-Wilson: You find things you really enjoy doing. No matter how busy you are, you will find time to do it. Everyone has at least 15 minutes to do something. My motto is “something is always better than nothing.” A big first step would be to put the phone down. Too much time is wasted scrolling through social media.

Pearson: Self-care begins with self-discipline. If you can discipline yourself to be busy, you can discipline yourself to relax and rest. The saying “if you want to get something done, give it to someone who is busy” indicates busy people have disciplined themselves to get things done. So use some of that self-discipline to relax and rest or learn to “just say no.” ■



ASA 2023 Data Visualization POSTER & PROJECT STATISTICS COMPETITION WINNERS

The American Statistical Association is pleased to announce the winners of the 2023 ASA Data Visualization Poster and Statistics Project competitions. First-place winners received \$300, a certificate, and grade-appropriate graphing calculators provided by Texas Instruments. Second-place winners received \$200 and a certificate, third-place winners received \$100 and a certificate, and honorable mentions received certificates.

The poster and project competitions are directed by the ASA/National Council of Teachers of Mathematics Joint Committee on Curriculum in Statistics and Probability. The 2023 ASA Data Visualization Poster Competition leader is Jennifer Broatch of Arizona State University. Michelle Larson of the University of Iowa served as head project competition leader, with Dione Maxwell of Loganville High School serving as the associate head project competition leader.

Posters are due every year on April 1 and are submitted digitally as photos of physical posters or as digitally created posters. Projects (written reports) for grades 7–12 are due every year on June 1.

For entry forms, instructional webinars, the rubrics used for judging the posters and projects, and information about previous winners, visit the poster competition webpage at <https://bit.ly/34VmGNg> and the project competition webpage at <https://bit.ly/3surRMv>.

Regional Poster Competition Leaders

Students outside the regional competition areas submit their posters directly to the ASA office, which are then separately judged by the Washington Statistical Society as part of the Other Region. The best posters from each region move on to the national judging. Information about regional poster competitions and winners is available on the individual regional poster competition websites.

Connecticut Chapter Statistical Poster Competition

Zhou Fan and Leying Guan
Yale University
<https://bit.ly/44ePhGT>

Kansas/Western Missouri Statistics Poster Contest

Ananda Jayawardhana
Pittsburg State University
<https://bit.ly/46BvmDN>

Michigan Statistics Poster Competition

Dan Adrian
Grand Valley State University
<https://bit.ly/46zyEHT>

Nevada K–12 Statistics Poster Competition

Elizabeth Harris
Lied STEM Academy
<https://bit.ly/3CV9WDQ>

Ohio Data Visualization Poster Competition

Jerry Moreno
John Carroll University
<https://bit.ly/3CU4NvX>

Pennsylvania Statistics Poster Competition

Pete Skoner
Saint Francis University
Science Outreach Center
<https://bit.ly/3rfLKJR>

Pullman, Washington Statistics Poster Competition

Dean Johnson
Washington State University
<https://bit.ly/3NCcVWH>

Southern California Statistics Data Visualization Poster Competition

Rebecca Le
County of Riverside
California State University,
Long Beach
<https://bit.ly/3NzWREr>

Washington Statistical Society Data Visualization Poster Competition (DC Metro Area)

Sabrina Zhang
Westat
<https://bit.ly/34VmGNg>

ASA National Data Visualization Poster Competition

Jennifer Broatch, Leader
Arizona State University
Rebecca Nichols, Contact
ASA K–16 Education Coordinator
<https://bit.ly/34VmGNg>

2023 National Project Competition Winners

Each year, the statistical project competition attracts a wide variety of submissions in which students from grades 7–12 conduct creative studies. The submission deadline for the project competition is June 1 to enable participation from high-school students who may have been preparing for the AP Statistics exam administered mid-May. The statistical project competition is especially useful for these students because it provides them with opportunities to apply the statistical skills they acquired throughout the school year to solve real-world problems of interest to them. Results of the project competition and a list of the judges can be found at <http://magazine.amstat.org>.

Get Involved

For information about how you can start a regional poster competition or mentor students in your area, read the July 2011 issue of *Amstat News* at <https://bit.ly/3O9xXgY>.

You can download a flier about the ASA poster and project competitions and other K–12 statistics education programs and resources to share with your local schools at <https://bit.ly/3JULyWU>.

For additional information or questions regarding how to get involved in the competitions, contact Rebecca Nichols at rebecca@amstat.org.

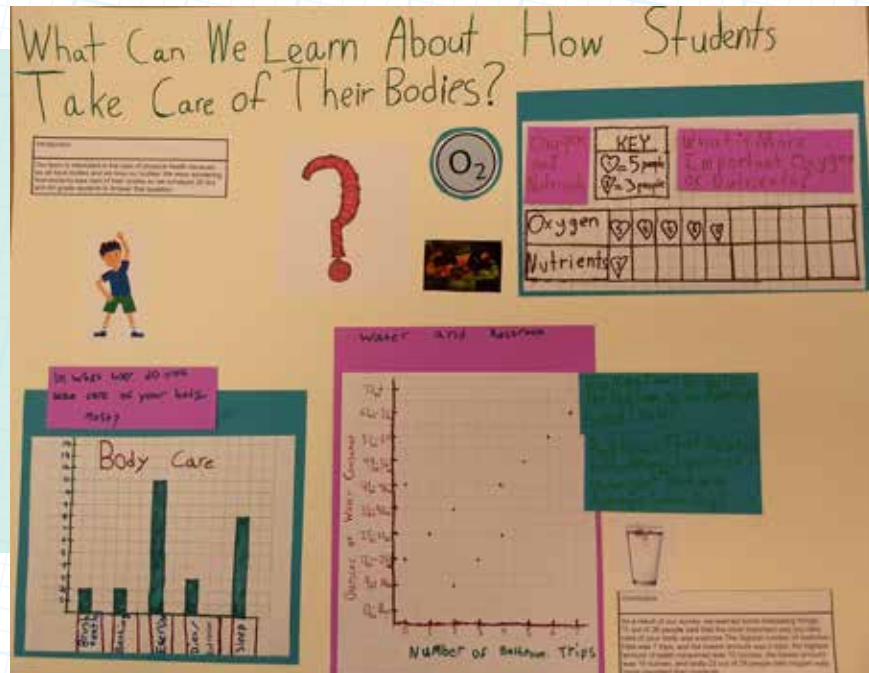
POSTER COMPETITION WINNERS GRADES K-3

First Place

Olivia Ly, Amelia Herlein, and Jackson Farrar

“What Can We Learn About How Students Take Care of Their Bodies?”

Explorer Elementary School
Caledonia, Michigan

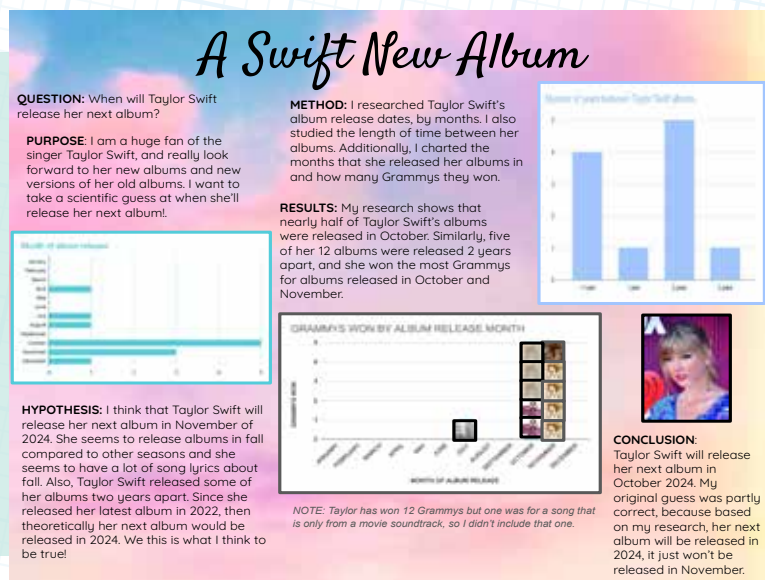


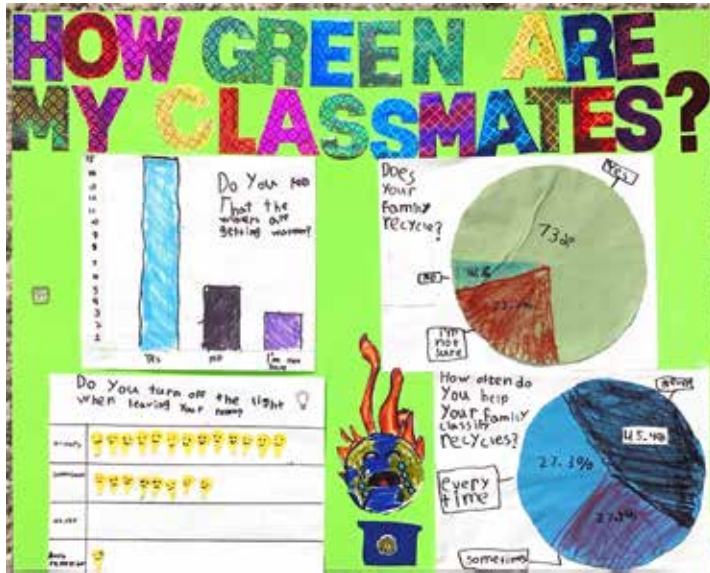
Second Place

Sadie Feeney

“A Swift New Album”

Rydal Elementary School
Huntingdon Valley,
Pennsylvania



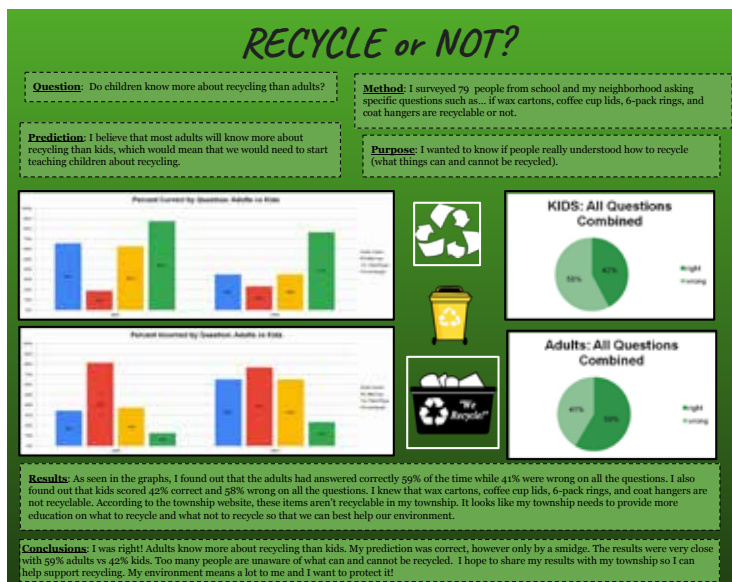


Third Place

Leo Zhang

“How Green Are My Classmates?”

High Plain Elementary School
Andover, Massachusetts

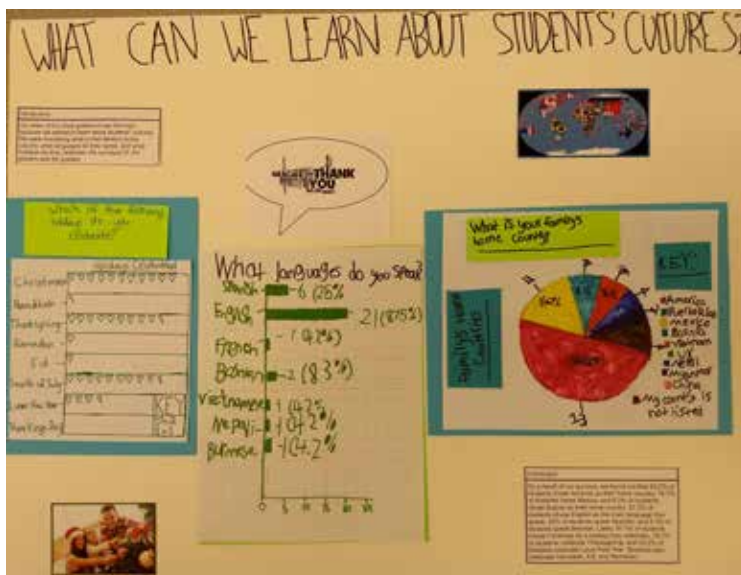


Honorable Mention

Etta Permut

“Recycle or Not”

Rydal Elementary School
Huntingdon Valley,
Pennsylvania



Honorable Mention

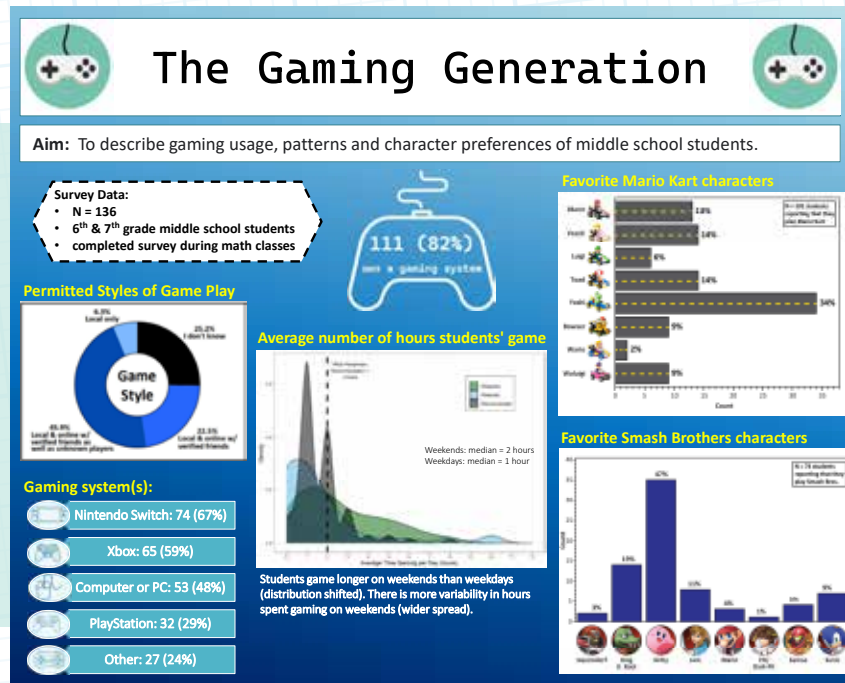
Sage Saltese, Amar Podrug, and Kenay Muniz-Perez

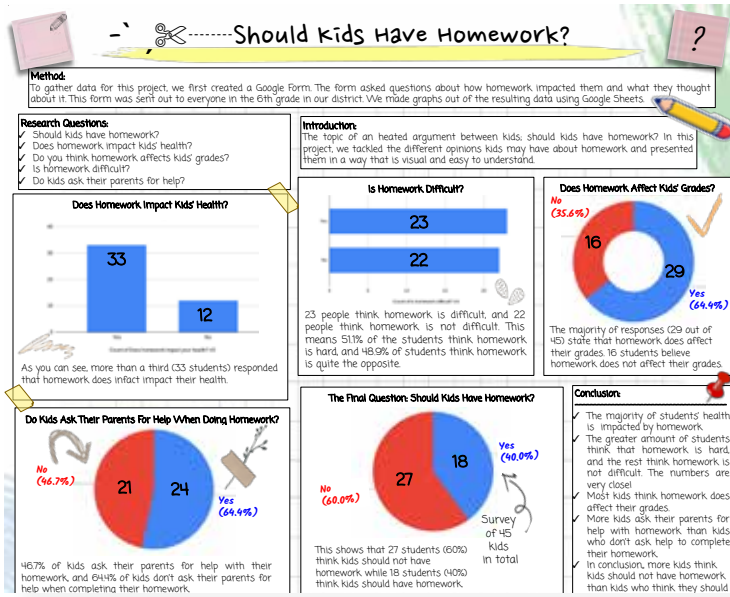
“What Can We Learn About Students’ Cultures?”

Explorer Elementary School
Caledonia, Michigan

POSTER COMPETITION WINNERS GRADES 4-6

First Place
Cole Nowacki
 "The Gaming Generation"
 Kirtland Middle School
 Kirtland, Ohio



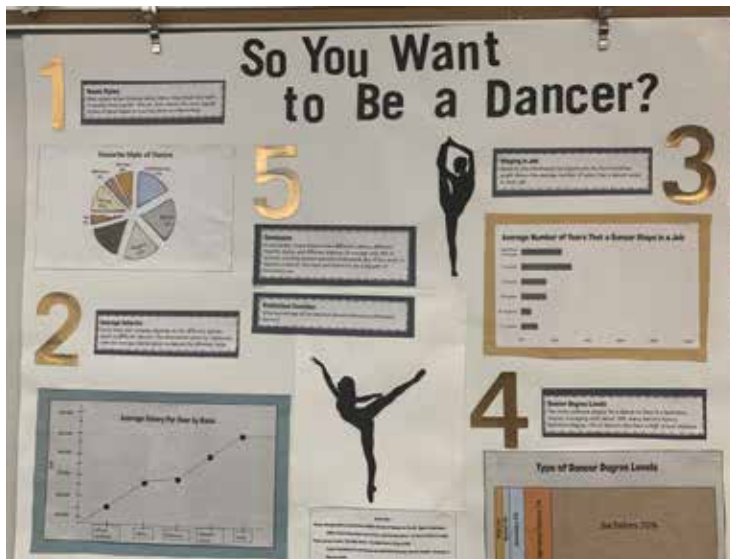


Second Place

**Shrimeghna Madhugundu,
Jahnvi N. Modi, and
Kelsey C. Joo**

“Should Kids Have Homework?”

West Woods Upper
Elementary School
Farmington, Connecticut



Third Place

Maddie Yin

“So You Want to Be a Dancer?”

Lied STEM Academy
Las Vegas, Nevada

ASA AMERICAN STATISTICAL ASSOCIATION
 Promoting the Use of Statistics in Education

The National Opioids Crisis: Substance Use and its Correlates
 Avinab Das, 8th Grade

Background
 Drugs have been a big problem of late, with the opioids epidemic sweeping the nation. More than 100,000 Americans died of drug overdose in 2022, and more than 2 million Americans live with addiction to opioids. Even with so many casualties, the desire for drugs remains real. What are the factors that may help explain this at a high level?

Hypotheses

- Unemployment increases drug related deaths, as drugs may be seen as a way of escapism.
- Increased drug use will increase the number of violent crimes committed.

Data Sources

- Age adjusted death rate from all drugs per 100,000 people in 2020 and 2021 for all US states and DC was obtained from the CDC's State Unintentional Drug Overdose Reporting System (SUDORS) database: <https://www.cdc.gov/drugoverdose/tox/drug-overdose/index.html>
- Similar unemployment rate data was obtained using the Bureau of Labor Statistics Data Finder tool: <https://beta.bls.gov/dataQuery/search>
- Violent crime rate data was obtained from the Bureau of Justice Statistics LEARCAT dashboard: <https://learcat.bjs.ojp.gov>

Methods

- I plotted the data on the US map to get an understanding of the geographic patterns of unemployment, drug use and violent crime in the US.
- I used boxplots and correlation analyses to test my hypotheses.

Figure 1: Drug-Related Deaths
 Figure 2: Summary Data by Year
 Figure 3: Unemployment by Year
 Figure 4: Violent Crime by Year

Results and Conclusions

- Overall regional patterns of unemployment, drug related deaths and violent crime were similar between 2020 and 2021, though small shifts were present.
- There was a stable and statistically significant correlation between unemployment and drug deaths.
- There was no association between drug deaths and violent crime.

Limitations

- Drug use deaths may not always be a good proxy for drug use.
- This analysis only included violent crime, while many drug related crimes may not be violent.

Third Place

Avinab Das

“The National Opioids Crisis: Substance Use and Its Correlates”

Robert Frost Middle School
 North Potomac, Maryland

Do NBA Teams with Better Teamwork or Star Players Win Playoffs?

Formulate question
 While watching an NBA game, I realized that one team had a star player, but the other team with no star was winning. A question that I got out of this was whether or not having a star can help a team win a playoff, or were other aspects like teamwork more important?

Collect data
 I made two metrics using 2021-22 season data from www.nba.com/stats
 (1) “AST:PTS Ratio”: To measure the teams teamwork I took the total assists (AST) in the season, and divided by the total points (PTS). A higher ratio means more teamwork.
 (2) “Average PTS of Top Player”: To measure the strength of a team’s star player, I took the average points of each team’s top player. My dependent variable was “Team Rank.”

Analyze Data

Interpret results
 The data shows that the “AST:PTS ratio” has a strong correlation with Team Rank, but “Average PTS of Top Player” is not correlated. This means that teams working together to score is more effective than feeding into a star. To win the NBA playoffs, a team needs talent, but talent won’t reach its full potential unless the team works together. This insight can be useful when drafting a player, such as prospect Victor Wembanyama, who many NBA teams building around.

The “AST:PTS ratio” has a strong, positive correlation with “Team Rank” ($r=0.69$).
“Average PTS of Top Player” is NOT correlated to Team Rank ($r=-.0148$).

Honorable Mention

Salat Nasimov

“Do NBA Teams with Better Teamwork or Star Players Win Playoffs?”

Luther Jackson Middle School
 Fairfax, Virginia

What Factors Affect the Education System (i.e., States Ranking) in the United States?

Introduction
 Education is a right that is guaranteed to every child in the United States. However, the quality of education varies significantly from state to state. This report explores the factors that affect the education system in the United States, including teacher pay, student spending, and household income.

Teacher Pay by State in 2023
 The chart shows that teacher pay varies significantly by state, with the highest pay in the District of Columbia and the lowest in Mississippi.

Student Spending by State in 2023
 The chart shows that student spending varies significantly by state, with the highest spending in the District of Columbia and the lowest in Mississippi.

Single-Parent Families by State in 2022
 The chart shows that the percentage of single-parent families varies significantly by state, with the highest percentage in Mississippi and the lowest in Utah.

Median Household Income by State in 2023
 The chart shows that median household income varies significantly by state, with the highest income in the District of Columbia and the lowest in Mississippi.

Average Public School Student Teacher Ratio in 2021
 The chart shows that the average public school student teacher ratio varies significantly by state, with the highest ratio in Mississippi and the lowest in Utah.

Honorable Mention

Jana Woo

“What Factors Affect the Education System in the United States?”

Hyde Park Middle School
 Las Vegas, Nevada

POSTER COMPETITION WINNERS GRADES 10–12

How to Win the ASA Poster Contest

First Place

Baxter Hovis, Jonah Sagers, Sam Bowen, and Gavin Paulus

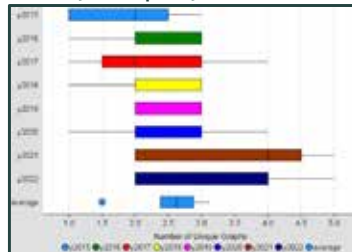
“How to Win the ASA Poster Contest”

Mastery School of Hawken
Cleveland, Ohio

Yearly Average of Popular Graph Types



Diversity of Graphs by Year



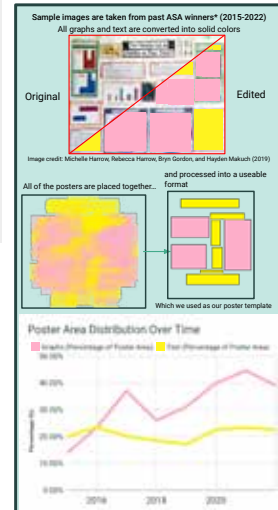
*Data was collected from the top three posters in the 4-6th, 7-9th, and 10-12th ASA competition categories from 2015-2022.

What factors make for a good ASA poster? How has that changed over time?

Trends in past winning posters help us create the ideal poster for the competition.

ASA winners have always valued bar charts for their simplicity. In fact, Every single winner from 2017 featured at least one bar graph. Recently, more complex graphs have started to rise in popularity, and there has been a corresponding decrease in bar graphs since 2019.

Over the years, The ASA Data Visualization Competition has seen a significant increase in the amount of area taken up by graphs and in the diversity of graphs in the winning posters.

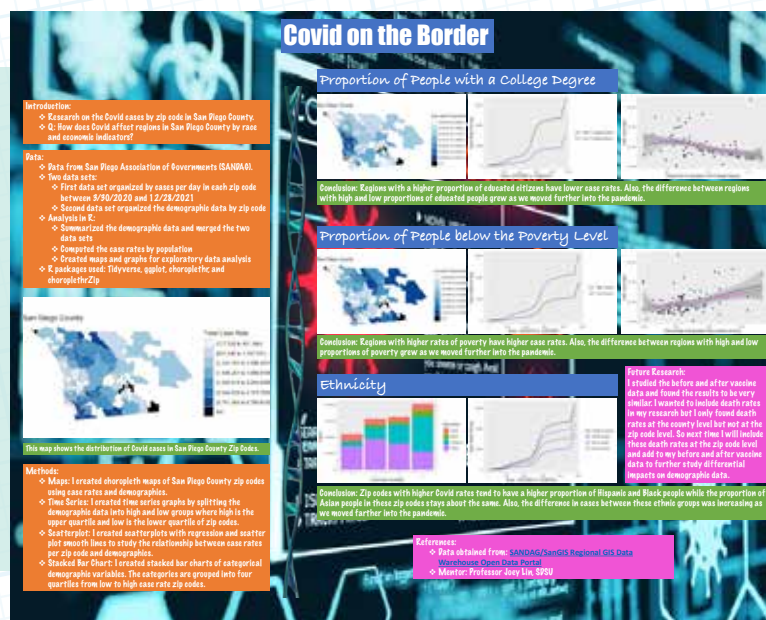



Second Place

Raymond Levine

“COVID on the Border”

Westview High School
San Diego, California






PUTTING SUSTAINABILITY UNDER SPOTLIGHT

An Analysis of ESG Disclosing Trends in SEC Filings

Do companies prioritize and communicate their sustainability-related practices?

Let us investigate how S&P 500 companies disclose ESG in their 10-k filings!

- 1 Find the list of S&P 500 companies from Wikipedia
- 2 Scrape companies' annual 10-k filings from SEC EDGAR website
- 3 Use natural language processing technique to count the occurrences of keywords from each filing
- 4 Conduct statistical analysis




WHAT IS ESG?

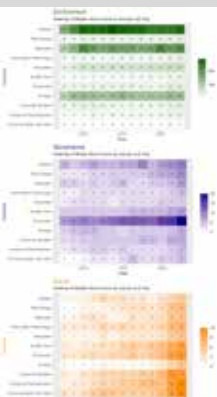
ESG (Environmental, Social, and Governance) provides a framework for investors to evaluate a company's long-term sustainability, potential risks and opportunities.

ENVIRONMENTAL FACTORS • Carbon emissions • Waste management • Resource depletion	SOCIAL FACTORS • Employee • Community • Customers	GOVERNANCE FACTORS • Transparency • Board of directors • Executive compensation
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WHERE do companies disclose their ESG related information?

To evaluate companies' ESG performance, investors often turn to the 10-K filings - the comprehensive annual reports that publicly traded companies must file with the Securities and Exchange Commission (SEC).





Note: "Height" is the component weight of S&P 500 index, determined by market capitalization, or the total market value of a company's outstanding shares. Log-transformation was used to reduce the skewness of weight.

Linear regression analysis shows that, in specific industries, larger firms prioritize more on disclosing ESG-related issues.

The frequency of the words "environment", "social", and "governance" in the 10-K filings of S&P 500 companies has steadily increased over time, with a noticeable acceleration in the past few years.

Moving forward, we plan to use advanced natural language processing techniques, such as sentiment analysis and topic modeling, to more accurately assess the extent and quality of corporate disclosure of ESG-related issues, and help investors and other stakeholders make more informed decisions.

The frequency of ESG-related language varies by industry. For example, utilities, energy and materials exhibit a higher frequency of environmental-related terms.

Third Place

Yifan Li

"Putting Sustainability Under the Spotlight: An Analysis of ESG Disclosing Trends in SEC Filings"

Poolesville High School
Rockville, Maryland

Has climate change affected fish growth in Alaska fisheries?

Introduction:

Within the past decade, numerous factors have prioritized the movement towards, one of the two ways to observe the health of these ecosystems is by testing if data provided is sufficient.





In this project, we performed exploratory data analysis focusing on a 2009 dataset about Massachusetts Blackswallow Backfish for evaluating various characteristics of the fish using hypothesis. We then conducted a new example of test to compare these characteristics to determine if there was a significant difference.

Hypothesis: There is a significant difference between the mean of government the total of carbon dioxide and the mean of the number of fish. Because there is a significant difference between the mean of government the total of carbon dioxide and the mean of the number of fish, we can conclude that there is a significant difference between the mean of government the total of carbon dioxide and the mean of the number of fish.

Method: We use statistical test of hypothesis to test the null hypothesis. We use the following steps to test the null hypothesis: 1. State the null hypothesis (H0) and the alternative hypothesis (Ha). 2. Choose the significance level (alpha). 3. Calculate the test statistic. 4. Determine the critical value. 5. Compare the test statistic to the critical value. 6. Make a decision to reject or fail to reject the null hypothesis.

Conclusion: We reject the null hypothesis. There is a significant difference between the mean of government the total of carbon dioxide and the mean of the number of fish.

Future Research: In the future, we plan to use advanced natural language processing techniques, such as sentiment analysis and topic modeling, to more accurately assess the extent and quality of corporate disclosure of ESG-related issues, and help investors and other stakeholders make more informed decisions.

Honorable Mention

Alexander Choi

"How Has Climate Change Impacted Fish Growth in Alaska Fisheries?"

Reno High School
Reno, Nevada

august 2023 amstat news 37

USCOTS 2023: Educators Share Ideas for Communicating With/About Data

Kelly McConville, Harvard University, and Allan Rossman, Cal Poly-San Luis Obispo



The 2023 George Cobb Lifetime Achievement Award in Statistics Education went to Maxine Pfannkuch. Pictured (from left): Roxy Peck, Danny Kaplan, Chris Franklin, Maxine Pfannkuch, and Dennis Pearl

MORE ONLINE
For more information about the United States Conference on Teaching Statistics, visit www.causeweb.org/cause/uscots/uscots23.

Three hundred twenty-one statistics educators gathered in State College, Pennsylvania, May 30–June 3 at the tenth United States Conference on Teaching Statistics (USCOTS) to exchange ideas and provide mutual support.

Regina Nuzzo, Larry Lesser, Kelly Spoon, and Sara Stoudt gave talks on the conference theme, “Communicating With/About Data.” A highlight was the awards banquet, which featured a presentation by John Bailer about helping students become critical consumers of the news

and a live Zoom performance of “The Night’s Overfitting Game” by Cynthia Rudin (see www.causeweb.org/cause/uscots/uscots23), who is the grand prize winner of the 2023 A-Mu-Sing Competition. Also, Dennis Pearl presented the George Cobb Lifetime Achievement Award in Statistics Education to Maxine Pfannkuch, who came from Auckland, New Zealand.

Judith Canner organized posters and beyond sessions, which included 52 poster presentations. The conference also featured 13 pre-conference

workshops, 29 breakout sessions, and 33 birds-of-a-feather discussions. Presenters shared ideas and facilitated discussions on a topics such as statistical writing courses, alternative grading practices, the role of AI in the statistics classroom, resources for teaching with social justice, teaching coding skills, flipped classrooms, data science courses, and revising the *Guidelines for Assessment and Instruction in Statistics Education (GAISE) College Report*. One of the breakout sessions offered tributes to the professional legacy of Stu Hunter on



Photo courtesy of USCOTS 2023 Program Committee

USCOTS program committee members celebrate after a successful opening session.

his 100th birthday, which happened to fall on the last day of the conference. Hunter made an appearance via Zoom to celebrate the occasion.

USCOTS 2023 also included a mini conference devoted to statistics education research. Organized by Laura Le and Matt Beckman, this conference featured a keynote presentation by Hollylynn Lee, as well as 15 poster presentations, three talks, and a closing session with reflections from Pfannkuch.

Following USCOTS, Roxy Peck organized the “Beyond AP Statistics” (BAPS) workshop for high-school teachers and university faculty. BAPS is sponsored by the ASA/National Council of Teachers of



Participants have small-group discussions during the breakout session on revising the *Guidelines for Assessment and Instruction in Statistics Education (GAISE) College Report*.

Mathematics Joint Committee on Curriculum in Statistics and Probability.

Conference slides, handouts, and videos of the keynote

addresses can be found on the conference website (www.causeweb.org/cause/uscots).

The next USCOTS will be held in the spring of 2025. ■

PORTLAND, OREGON



Photo/Getty Images

Invited Session Proposals Sought for JSM 2024

Debashis Ghosh, JSM 2024 Program Chair



Debashis Ghosh

Next year's JSM will be held in Portland, Oregon, from August 3–8. Portland is known for its beauty, location, cuisine, micro-breweries, and coffee. It's also the home of the popular TV series *Portlandia*.

The theme for the 2024 meetings—chosen by ASA President-elect Bonnie Ghosh-Dastidar—is “Statistics and Data Science: Informing Policy and Countering Misinformation,” which speaks to the rise in the generation, analysis, and use of data in all segments of society for decision-making purposes. Examples include but are not limited to the following:

- Government
- Health Care

- Education
- Finance
- Sports
- Entertainment
- Marketing

However, a rising threat to society has been the spread of misinformation, and our field has an important role to play in combatting this phenomenon. Session proposals relating to this theme are welcome.

Invited Sessions Proposals

The sessions can be oral presentations or panel discussions. A typical invited session usually consists of two to six speakers and discussants who report

and discuss the most interesting and significant findings in their research under a unified theme. For an invited panel, a typical session consists of three to six people who provide commentary, discussion, and engaging debate on a particular topic of contemporary interest. The ideal session involves fresh, important work many JSM attendees will find interesting. Many of the most stimulating sessions present diverse viewpoints and strategies on a common topic, with speakers coming from different institutions and taking different approaches toward similar problems.

To organize a session, you should first set a theme of broad

interest and identify and contact potential participants. Ideally, you can make the case as to why it is relevant to the JSM meeting theme, but this is not required. Then you should write a proposal consisting of a brief abstract/rationale, a list of participants, and tentative titles for the talks (titles can be changed later).

When planning an invited session, note that JSM has strict guidelines for participation, including the “one speaker, one talk” rule, which states an individual can only be part of one session proposal. Talk to potential speakers to ensure they are not committing to multiple invited proposals.

Once written, you need to submit the session proposal on or after July 13 via the online system, indicating type of session and proposed sponsor. You are encouraged to contact a member of the program committee before submitting to see if they are willing to sponsor the session. If you are a member of an ASA section or another sponsoring society, going through the corresponding representative is often a good way to proceed. They may accept the session outright for one of their allocated spots, or they may enter it into a general competition in which selection is decided by a consensus vote of the entire program committee. In either case, only sessions submitted via the online system will be considered.

Session proposals must be submitted online by September 7, and decisions about the invited program will be made by mid-October. Contact program committee members well ahead of the September deadline. If you do not know who to contact, reach out

to Program Chair Debashis Ghosh at debashis.ghosh@cuanschutz.edu or associate chairs, Esra Kurum at esra.kurum@ucr.edu and Ronglai Shen at shenr@mskcc.org.

Memorial Sessions

There are five open slots for memorial sessions at JSM 2024. One strategy to maximize your chance of obtaining an invited memorial session is to first submit your proposal as a regular invited session. You may pick “memorial session” as the sponsor, but also pick sections as sponsors. If one of the sections picks up your proposal as one of its guaranteed sessions, then you are done. If not, your proposal might still be selected in the open competition for invited sessions. If that fails, your proposal will automatically compete for one of the five designated invited memorial session slots. Unless the session is selected by an organization or ASA section in October, decisions about memorial sessions will be made later in the fall.



Invited Poster Sessions

An invited poster session consisting of up to 40 electronic posters will take place during the Opening Mixer on the Sunday of JSM 2024. Send your idea (or the poster itself) to JSM 2024 Poster Chair Ryan Peterson at ryan.a.peterson@cuanschutz.edu.

Introductory Overview Lectures

Introductory Overview Lecture (IOL) topics are selected because of their potential to enrich the future direction of statistical theory and practice through broader dissemination. For 2024, we aim to have four IOLs. These proposals should address timely and important statistical topics of interest to a wide range of JSM attendees. Note that IOL speakers are an exception to the “one speaker, one session” rule, as they can also present an invited or contributed paper, panel, or poster. Email Ghosh with suggestions for topics and speakers at debashis.ghosh@cuanschutz.edu. ■



SDSS

SYMPOSIUM ON DATA SCIENCE & STATISTICS

ST. LOUIS, MISSOURI • MAY 23–26, 2023

SDSS2023: Diverse Panels, Engaging Discussions, Memorable Experiences

Emily Dodwell, SDSS 2023 Program Chair

MORE ONLINE
View more photos
of the event
at <https://bit.ly/3pQVHwX>.

The St. Louis Union Station Hotel served as the backdrop for the 2023 Symposium on Data Science and Statistics, which welcomed attendees from across academia, industry, and government. This year's theme—"Inquire, Investigate, Implement, Innovate"—served as a representation of the iterative process required to pursue new opportunities and power unexpected breakthroughs. It was intended to be relevant to the various stages of a data scientist's career and the twists and turns of a data science project, regardless of the specific area or application.

The program was anchored by three plenary panels. Felicia Simpson, Jeri Mulrow, and Ming Li opened the first day with a discussion about the motivations, challenges, and accomplishments that go hand-in-hand with new career opportunities in "Exploring New Paths:

Reinvigorating Your Career." The next day's panel, titled "Communicating Statistics: Tools, Tips, and Tricks," featured Christine Zhang, Roger Peng, and Sara Stoudt. They led a lively conversation about their favorite data visualizations and elements that make them effective. In the third panel, "Open-Source Software: From Creation to Evaluation," Carol Willing, Daniell Toth, and Tracy Teal provided attendees with several on-ramps for engaging in various open source communities.

Attendees' engagement with the panelists was evidenced by conversations that spilled into hallways and continued well after the plenary sessions ended.

Additionally, many of the panelists attended poster sessions and coffee breaks and arrived early to serve as mentors during the speed mentoring breakfast.

St. Louis Union Station provided ample opportunity for

new friends and longtime colleagues to connect with its variety of restaurants and attractions within steps of the hotel. After enjoying toasted ravioli—one of the city's signature dishes—at the opening mixer, several attendees took in the Fire and Light show. Staged on a lake outside the hotel, this hourly display times pumping music to bursts of fire shot out of lotus-shaped pods. Other attendees visited the St. Louis Aquarium during a lunch break or walked the mile and a half down Market Street to take in the Gateway Arch.

This year's program committee incorporated feedback from prior years into this year's program logistics and extracurricular offerings. Following requests from attendees last year to note the difficulty level of talks in the program, the committee included the speakers' intended target audience as a point of reference (i.e., expert, mid-level,



SDSS
2023
photos
by Olivia
Brown/
ASA

Panelists Jeri Mulrow, Ming Li, and Felicia Simpson open the first day with a discussion about the motivations, challenges, and accomplishments that go hand-in-hand with new career opportunities in “Exploring New Paths: Reinvigorating Your Career.”



ASA Executive Director Ron Wasserstein makes Jeri Mulrow laugh during a break at SDSS 2023.



Ishmael Jesse N. Adikorley of Mehdi Maadooliat discusses his poster, “Regularized Singular Spectrum Analysis,” during an SDSS poster session.

and beginner). This enabled attendees to craft a schedule that best reflected their levels of experience with material across the six tracks. Also, to support additional meeting and greeting, the committee planned a well-attended mini golf outing, during which participants in small groups tried their hands at an 18-hole course.

Amanda Koepke, a mathematical statistician at the National Institute of Standards and Technology, will chair the program for SDSS 2024. ■



Panelists Sara Stoudt, Roger Peng, and Christine Zhang discuss their favorite data visualizations in “Communicating Statistics: Tools, Tips, and Tricks.”

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Obituary

Thomas Sternberg

Thomas (Shlomo) Paul Sternberg passed away June 19, 2023, after 86 years of a life of loyalty, love, and generosity.

Sternberg's childlike gist for life and indomitable independence were shaped by being a child survivor of the Holocaust. For a man whose family meant everything, he arrived on the shores of New York in 1952 at the age of 15 without any.

Sternberg was born in 1937 in Arad, Romania. He spent his early childhood during World War II hiding in the Transylvanian mountains to avoid capture. After the war, he was reunited with his father, Simcha Sternberg; stepmother, Dahlia Sternberg; and younger brother, Haim Sternberg, in Arad and, together, they emigrated to Israel in 1950. In Israel, he was further reunited with his older brother, Mordecai Sternberg, and mother, Aviva Moses.

Sternberg lived and went to school at Kibbutz Kfar Szold. While playing table tennis at the YMCA in Jerusalem, he met a US Navy sailor named Wallace Hudson (known later as Uncle Wally). In 1952,

Uncle Wally brought Sternberg to the United States and eventually arranged for him to stay in Alexandria, Virginia.

Sternberg attended George Washington High School and, while trying to learn English and supporting himself, joined the debate team. After graduating high school in 1955, he attended Virginia Polytechnic Institute, earning a bachelor's in chemical engineering. He returned to Israel to serve in the Israeli Air Force prior to graduating from VPI.

Sternberg developed a lifelong love of and fascination with statistics from his best friend at VPI, Al Romano. To pursue this calling, he attended Stanford University and earned his master's in statistics.

While at Stanford, Sternberg met and—within six months—married the love of his life, Jette Ibæk Jakobsen in 1964. Their loving marriage lasted 50 years, until Jette passed away from an aggressive form of multiple sclerosis that confined her to a wheelchair for 40 years of their marriage. Despite these challenges, they had a daughter, Maya Raquel Sternberg, and lived in Minnesota, London, Budapest, and Copenhagen. They returned to the United States in 1973 and settled in Atlanta, Georgia.

Sternberg started a travel agency that specialized in student travel and began designing a software system—the first of its kind—that allowed travel agents to streamline and automate their office tasks.

Sternberg sponsored his brother Haim and Haim's family to come to the United States in 1981. Together, they built the company that sold the T.O.M system. After retiring from his entrepreneurial enterprises, he returned to work as a statistician at various research institutions.

Sternberg's hobbies included aviation, going to the opera and symphony, meeting new friends, debating history and current events, and reading (or at least always carrying a book—often Shakespeare or a statistics book). However, his biggest joy and pride was family. Sternberg had an infectious eternal optimism and boyish sense of humor. He lived in the present until he drew his last breath.

Memorial donations can be made to Americans for Ben-Gurion University (<https://americansforbgu.org/donate/donate-now>) or Books for Africa (www.booksforafrica.org/donate.html).



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chapternews

Orange County

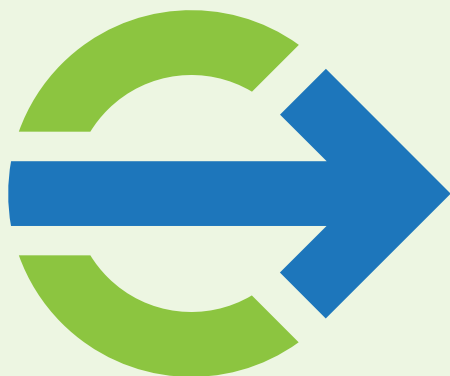
The Orange County Chapter will host the 2023 Annual Orange County Biostatistics Symposium September 29–30. The theme of the two-day symposium is “Innovative Designs in Expediting Drug and Device Development.”

The symposium offers clinical trial personnel, regulatory affairs associates, academic researchers, and students an opportunity to hear from leading statistical and pharmaceutical/medical device experts from industry, academia, and regulatory agencies. It will focus on topics related to

recent advances in methodology and applications related to complex innovation trial design, master protocols, gene and cell therapy, and real-world evidence-based research. In addition, academic researchers and students will present their research.

Learn about the symposium program at www.oclbasa.org. To register, visit <https://2023ocbiostatistics.eventbee.com>. Questions can be emailed to the 2023 symposium committee chair, Gajanan Bhat, at gajbhat@gmail.com. ■

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This month's Top 10 is the 'Top Ten **Statistics and Data Science T-Shirt Slogans.**'

Amstat News continues its hilarious offering by ASA Executive Director Ron Wasserstein. Each month, he delivers a special "Top 10"—one that aired during a recent edition of the *Practical Significance* podcast. "With the 2023 Joint Statistical Meetings just around the corner, some of you may be thinking about the T-shirt you would like to rock at the conference," says Ron. Here, he helps by offering the "Top Ten Statistics and Data Science T-Shirt Slogans."



Wasserstein



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

10

Keep Calm and Be Significant

09

With great power comes significant responsibility.

08

Data is my superpower. What's yours?

07

Yes, I know you hated your stats class in college.

06

What's your research question?

05

I'm consistent, I'm efficient, and I'm almost sure.

04

"R" you ready?

03

Found the problem. It's μ .

02

A data scientist is a machine for turning coffee into models.

#01

$p = .051$





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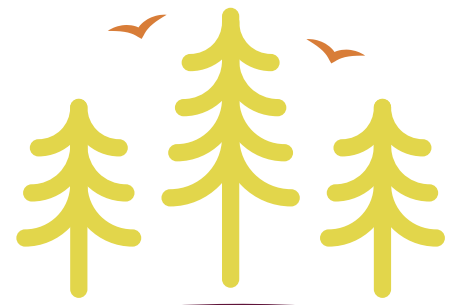
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