BIOSTATISTICS BULLETIN

October 2022　　　vumc.org/biostatistics　　　@vandy_biostat

Daring to grow: Renovations in progress
Innovation, expansion, and celebrations ahead

On August 19, the department kicked off the 2022–2023 academic year by welcoming new students (some shown above with vice chair of education Cindy Chen and graduate program director Ben French, fourth and third from right) and returning members to the tenth floor of 2525 West End Avenue. The expansion into Suite 1020 brings most of the department's office areas together under one roof, with accessible showers, a lactation room, lockers with digital keypads, and an additional break area among the new amenities.

As we prepare to celebrate the 20th anniversary of the department, we continue to navigate the challenges presented by the COVID-19 pandemic and the changing landscape of statistical science. We hope you'll join us in conversations and at conferences throughout the coming year.

Crescere aude, Latin for "dare to grow," is the motto of Vanderbilt University.

In August, our Wednesday seminar series featured University of Pittsburgh's Chris McKennan on quantifying uncertainty in peptide-tandem mass spectrum matches; Aalto University's Aki Vehtari on reference models in variable selection; and Kevin Coombes, Medical College of Georgia, on hyperspheres and proteins. The September lineup: omics expert Wei Sun, Fred Hutch; Melanie Quintana, director of trial design and analysis at Berry Consultants; Wei Pan, an ASA Fellow whose work at Minnesota includes statistical genetics, omics, neuroimaging, and deep learning; and Nilanjan Chatterjee, Bloomberg Distinguished Professor at Johns Hopkins. Amir Asiaee is the organizer of the 2022–2023 series, with administrative support from Jena Altstatt. Most seminars commence at 1:30 p.m. CT; see the schedule page for specific descriptions.

Visit the Vanderbilt-Nigeria Biostatistics Training Program webpage to learn about the NIH-funded VN-BioStat partnership.

VBSIUU interns—the first cohort

The inaugural season of the Vanderbilt Biostatistics Summer Internship for Underrepresented Undergraduates took place this spring, from May 23 through July 1. For six weeks, the interns conducted research, attended classes on statistics and computing, and received professional development training. Mary Guirguis (second from right) and Akshat Vasisht (second from left) investigated "Reproducibility and Quality Control for Combination Drug Screening" in collaboration with PhD student Elisa Yazdani and faculty mentor Amir Asiaee. Rajala Bean (right) focused on "SEPSIGN: Early Identification of SEPsis SIGNs in Emergency Department" in collaboration with faculty mentor Chris Lindsell and biostatistician Cassie Hennessy. The course director was Leena Choi (left).

VN-BioStat—the first fellows

Abdurrahman Abdulhamid

Yusuf Ibrahim Ibrahim

Graduations

May 31: **Nathan T. James**

Dissertation: Bayesian Methods for Cumulative Probability Models and Population Pharmacokinetic Models

Advisor: Leena Choi

May 31: **Coleman Harris**

Dissertation: Statistical Methods and Computational Tools for Normalization and Spatial Analysis

Advisor: Simon Vandekar

August 12:
Megan Hollister Murray

Dissertation: On second-generation p-values for equivalence testing and study planning, and flexible false discovery rate computation for classical p-values

Advisor: Jeffrey Blume

Next issue: Get to know our new MS and PhD students, celebrate additional hires & promotions, and more!
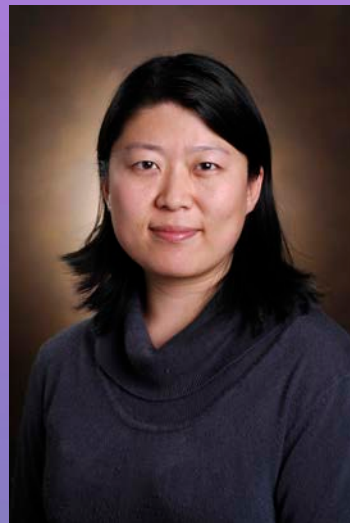
Photo: Melinda Aldrich

Appointments, Promotions, and Honors

Visit <u>Our People</u> for more about these individuals.

Appointed Vice Chair of Education and promoted to Professor: **Qingxia Cindy Chen**

Appointed Director of Graduate Studies: **Ben French**

Promoted to Professor: **Fei Ye**

Promoted to Assistant in Biostatistics: **Alex Zhao**

Winner of the 2022 Outstanding Faculty Mentor Award: **Dandan Liu**

Winner of the 2022 Golden Apple Award for Excellence in Teaching: **Cole Beck**

Promoted to Research Assistant Professor: **Shi Huang**

Appointments, Promotions, and Honors

Promoted to Senior Quality Assurance Analyst:
Bart Sharp

Photo: Steve Green / Vanderbilt University

Promoted to Quality Assurance Analyst:
Vangmayee (Vinni) Yenukonda

2021 Department Publication and Report Awards

presented September 21, 2022

The Linda Stewart Analysis Report Award: **Ryan Moore** received this for "Patient-centered services to improve specialty medication adherence: A randomized clinical trial."

The IT Innovation Award: **Jubilee Tan** and **Shawn Garbett** received this for the Biostatistics Reporting System, which (in Shawn's words) is "for anyone needing an Rmarkdown report running on cron," with linkage to REDCap provided via {rccola}.

The Patrick G. Arbogast Collaborative Publication Award: **Andrew Spieker** and **Robert Greevy** received this for "Effects of a Tailored Text Messaging Intervention among Diverse Adults with Type 2 Diabetes: Evidence from the 15-month REACH Randomized Control Trial," in *Diabetes Care*.

The Methods Publication Award: **Gustavo Amorim**, **Ran Tao**, and **Bryan Shepherd** received this for "Two-phase sampling designs for data validation in settings with covariate measurement error and continuous outcome," in *Journal of the Royal Statistical Society - Series A (Statistics in Society)*. **Sarah Lotspeich** (PhD, 2021; now an assistant professor at Wake Forest's new Department of Statistical Sciences) is also a co-author of this paper.

We thank the judges of this year's submissions: Cole Beck, Cindy Chen, Leena Choi, Josh DeClercq, Tatsuki Koyama, Hui Nian, Dale Plummer, Jonathan Schildcrout, Bryan Shepherd, Chris Slaughter, and Yaomin Xu.

Appointments, Promotions, and Honors

(continued)

Promoted to Lead Biostatistician: **Henry Domenico** and **Meng Xu**

What are the different tiers of biostatistical expertise and experience? See "Roles" on our Analytical Staff page to learn about them.

Promoted to Senior Biostatistician: **Zhihong Yu** and **Andrew Guide**

Biostatistics Graduate Student Association Officers, 2022–2023

President: **Jamie Joseph**

Vice President: **Marisa Blackman**

Treasurer: **Ruby Xiong**

Secretary: **Chiara Di Gravio**

First-Year Liaison: **Elisa Yazdani**

Distinguished Teaching Assistant, 2022, for excellence in teaching and a dedication to peer education: **Max Rohde**

W. S. Gosset Award for Exceptional Research, 2022: **Chiara Di Gravio**

See our student publications page to access some of Di Gravio's papers, including her January 2022 report in *Biometrics* (co-authored with **Ran Tao** and **Jonathan Schildcrout**).

Commodore Award in Biostatistics, 2022, for enriching the department and graduate program through ingenuity, dedication, and altruism: **Jamie Joseph**
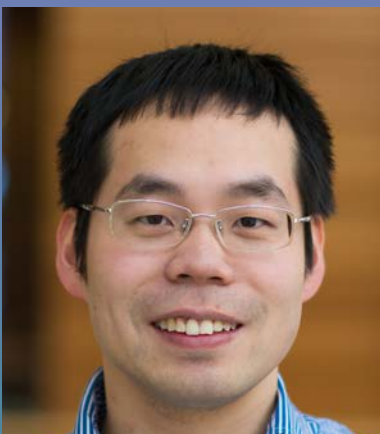
Appointments, Promotions, and Honors

Mario Davidson (here receiving the 2022 Geoffrey David Chazen Faculty Award for Innovation in Medical Education from AEE officers Lourdes Estrada, Joseph Gigante, and Neil Osheroff) has been elected to the Academy of Excellence in Education Board. His two-year term began on July 1.

The FDA's Center for Drug Evaluation and Research (CDER) has appointed **Frank Harrell** as a senior biostatistics advisor to the Office of the Center Director under the Intergovernmental Personnel Act (IPA) Mobility Program. Harrell looks forward "to making clinical trials more efficient and flexible, as well as to fostering development of statistical methods to analyze new types of patient outcomes in therapeutic clinical trials. My last two years of working with my Vanderbilt biostatistics and VICTR colleagues on the design and analysis of many high-profile Vanderbilt-led COVID-19 clinical trials has given me experience and ideas that I plan to put into use at FDA."

Assistant professor **Ran Tao** is the winner (determined by a panel of external referees) of the 2022 Biostatistics Faculty Development Award competition, for "Efficient estimation in two-phase studies with error-prone time-to-event outcome and covariates." Tao was also recently elected as the 2023–2025 Council of Sections representative for the American Statistical Association's Statistics in Epidemiology members; **Fei Ye** is serving as program chair–elect for the same section.

Honors and Milestones

45 years at Vanderbilt University Medical Center

Bill Dupont (left)

15 years		10 years
Fei Ye	Sharon Phillips	Bob Johnson
Li Wang	Samuel Nwosu	
Chris Slaughter	Mario Davidson	

5 years

Derek K. Smith	Laurie Samuels	Omair Khan
Tiger Sheng	Chris Lindsell	Jenny Jones

PhD student **Julia Whitman** (top right) received a 2022 Alavi Mandell Award from the Society of Nuclear Medicine & Molecular Imaging for Assessment and Comparison of 18F-Fluorocholine PET and 99mTc-Sestamibi Scans in Identifying Parathyroid Adenomas: A Metaanalysis.

Assistant **Shawn Garbett** and professor **Jonathan Schildcrout** are members of a Medical Center team that will be funded by a five-year, $4.5 million grant from the National Human Genome Research Institute to explore clinical uses for polygenic risk scores.

Assistant professor **Andrew Spieker** has won a Developmental Core Award from the Tennessee Center for AIDS Research (CFAR) to support his evaluation of longitudinal effects of antiretroviral therapy on weight gain in persons living with HIV.

PhD student **Tianyi Sun** (bottom right) has been appointed to a two-year term on ENAR's Council for Emerging and New Statisticians.

Michael Matheny, associate professor of biomedical informatics, medicine, and biostatistics, was inducted into the American Medical Informatics Association as a fellow at the AMIA's annual meeting in May.

Bradley Malin, Accenture professor of biomedical informatics, biostatistics, and computer science, received the Lasting Research Award from the Association for Computing Machinery in April.

Welcome to the Department

Milad Abbasi
Cloud Computing Developer

Jinyuan Liu
Assistant Professor

Kun Bai
Biostatistician

Onika Abrams
Health Services Research Analyst

Panpan Zhang
Assistant Professor

Siyuan Ma
Assistant Professor

Jackson Resser
Biostatistician

Cara Lwin
Associate Biostatistician

Trey McGonigle
Biostatistician

The theme of this year's all-department retreat is Reunite, Relax, Refresh.
The day will be dedicated to cultivating connections among colleagues old and new.

Conference news

Top: Minicourse attendees listen to an instructor on Day 1. Photo: Jenny Jones. Bottom: PhD candidate Kaidi Kang (right) discusses his poster with Emory's Benjamin Risk. Photo: Erin O. Smith / Vanderbilt University Medical Center

Our department hosted a combined 110+ participants on-site and online for the ASA Statistical Methods in Imaging annual meeting. See the slideshow on the poster session page for more photos from the May 25–27 gathering. According to one attendee, "This was - hands down - the best organized conference of this size I've ever attended. Absolutely incredible!" Chair: assistant professor Simon Vandekar

The 2022 Joint Statistical Meetings (JSM) in Washington, DC, included a gathering of department members and students past and present at Smith in Penn Quarter (right), as well as numerous presentations (see our blog for an extensive list with links).

ENAR 2023 will be in Nashville, March 19-22. We would love to see you at the invited sessions, the exhibit show, and more!
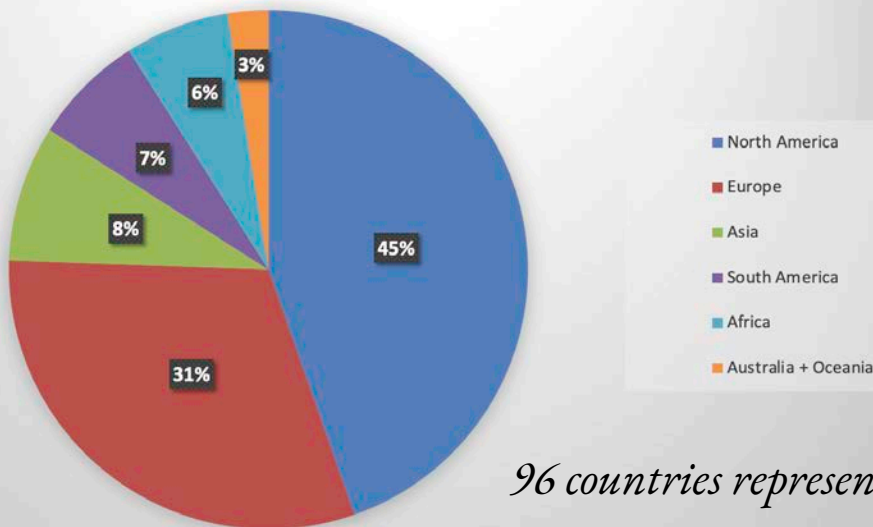

Photo: Simon Vandekar

useR! 2022 (June 20–23) brought tutorials, posters, talks, and networking opportunities to more than 1200 participants from every continent except Antarctica. The organizing committee went above and beyond to attract and accommodate a diverse range of presenters and attendees in a variety of ways, including trilingual communications, human and machine captioning, and other efforts towards inclusivity. Recordings of most presentations have been archived on the conference YouTube channel.

useR! registrants by geographical region

- North America — 45%
- Europe — 31%
- Asia — 8%
- South America — 7%
- Africa — 6%
- Australia + Oceania — 3%

96 countries represented!

The conference was chaired by associate professor Matthew S. Shotwell. See the useR! Organizers page to view the full rosters of the organizing and program committees. Department members chaired sessions, judged posters, and provided support in countless other ways.

Recent talks (a sampling)

Christopher Lindsell: "All for One, One for All: How to Run Multiple Networks of COVID-19 Clinical Trials on a Common Platform Using Bayesian Method," Society for Clinical Trials Annual Meeting, San Diego, May

Lindsell and Frank Harrell respectively represented academia and government in public forums coordinated by the Foundation for the National Institutes of Health (FNIH) and Accelerating COVID-19 Therapeutic Interventions and Vaccines (ACTIV), June. Harrell maintains a resource list for COVID-19 Randomized Clinical Trial Design at his website.

Yu Shyr: "A Practical Approach to Statistics for Junior Oncologists" and "Statistical Trial Design for Rare Molecular Subtypes," Canadian Lung Cancer Conference, Vancouver, June; "Challenges and Opportunities in Applied Mathematics, Statistics and Data Science for Cancer Research," 81st Annual Meeting of the Japanese Cancer Association, September

Recent posters

Panpan Zhang: "Appropriateness of Applying Cerebrospinal Fluid Biomarker Cutoffs from Alzheimer's Disease to Parkinson's Disease," Alzheimer's Association International Conference, San Diego, July–August; "Robust Methods for Missing Covariates in Longitudinal Studies with Application to Biomarker Research in Parkinson's Disease Dementia," International Congress of Parkinson's Disease and Movement Disorders, Madrid, September (both can be downloaded from panpan-zhang.com).

Some recent publications (department members in **bold**; asterisks = alumni; more highlights @vandy_biostat)

Harrell F. Biostatistics for Biomedical Research (updated edition). September.

French B, **Shotwell MS**. Regression models for ordinal outcomes. *JAMA*. August.

Lin EP, **Hsu CY**, Chiou JF, **Berry L** ... **Shyr Y**. Cox proportional hazard ratios overestimate survival benefit of immune checkpoint inhibitors (ICI): Cox-TEL adjustment and meta-analyses of PD-L1 expression and ICI survival benefit. *Journal of Thoracic Oncology*. August.

Lin EP, **Hsu CY**, **Berry L**, Bunn P, **Shyr Y**. Analysis of cancer survival associated with immune checkpoint inhibitors after statistical adjustment: A systematic review and meta-analyses. *JAMA Network Open*. August.

Strayer N*. {gridlayout} and {shinyuieditor}. July–September releases.

Shepherd BE, Han K, Chen T, **Bian A**, et al. Multiwave validation sampling for error-prone electronic health records. *Biometrics*. July.

Nicol PB, Barabási DL, Coombes KR, **Asiaee A**. SITH: An R package for visualizing and analyzing a spatial model of intratumor heterogeneity. *Computational and Systems Oncology.* May.

National Academies of Sciences, Engineering, and Medicine. *Leveraging Advances in Modern Science to Revitalize Low-Dose Radiation Research in the United States.* May. **Benjamin French** is on the NASEM committee that produced the report.

Harris C*, Wrobel J, **Vandekar S**. mxnorm: An R package to normalize multiplexed imaging data. *Journal of Open Source Software.* March.