

April/May 2021

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International Prize in Statistics

The 2021 International Prize in Statistics has been awarded to US biostatistician and IMS Fellow **Nan Laird**, Harvey V. Fineberg Professor of Biostatistics (Emerita) at Harvard T.H. Chan School of Public Health, in recognition of her work on powerful methods that have made possible the analysis of complex longitudinal studies.

Thanks to Laird's work, applied researchers have been able to wring detailed information from large longitudinal studies—sometimes over many decades, such as with the Nurses' Health Study in the US or the National Child Development Study in the UK. The design of these studies traditionally made it difficult for researchers to control for participants' individual characteristics while also dealing with often-sparse data from hard-to-reach populations. Laird's work gave researchers the tools they needed, allowing them to answer important questions in health, medicine,



Nan Laird

psychology and more. This jump-started the field of "random effects modeling for longitudinal data analysis," and the methods Laird introduced in 1982 are still the most widely used techniques in both observational studies and clinical trials today.

Garrett Fitzmaurice, professor of biostatistics at the Harvard T.H. Chan School of Public Health, called Laird's 1982 *Biometrics* paper "a statistical tour de force." "Nan pioneered the development and application of what are now considered to be modern statistical methods for longitudinal analysis. Her work has changed how statisticians and empirical researchers approach the analysis of data from longitudinal studies."

The International Prize in Statistics (<https://statprize.org/>) is awarded every two years by a collaboration among five leading international statistics organizations: IMS, ASA, ISI, RSS and IBS. The prize recognizes a major achievement by an individual or team in the statistics field, particularly an achievement of powerful and original ideas that has led to practical applications and breakthroughs in other disciplines.

Laird will receive the prize, which comes with an \$80,000 award, this July at the biennial International Statistical Institute World Statistics Congress, which will be held virtually: see <https://www.isi2021.org/>.

The first International Prize in Statistics was awarded in 2017 to British statistician David R. Cox for the development of the Cox proportional hazards model. US statistician Bradley Efron received the award in 2019 for the bootstrap, a clever computational method for assessing uncertainty in applied statistics.

Read more about Nan Laird's work and life on page 4.

Continues on page 4

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IMS Members' News

2021 IMS Tweedie New Researcher Award

The IMS Tweedie New Researcher Award provides funds for travel to present the Tweedie New Researcher Invited Lecture at the IMS New Researchers Conference. The recipient of the 2021 Tweedie New Researcher Award is **Chao Gao**.

Dr. Gao is an assistant professor in statistics at the University of Chicago. He was selected by the IMS Committee on Travel Awards "For groundbreaking contributions to robust statistics, including establishing connections with generative adversarial networks, network analysis, and high-dimensional statistical inference."



Chao Gao

New: COPSS Leadership Academy, for Emerging Leaders in Statistics

The purpose of the new COPSS Leadership Academy is to recognize early-career statistical scientists who show evidence of and potential for leadership and who will help shape and strengthen the field. Members are selected based on outstanding contributions to the field of statistical science in one or more of the following areas: education, training, and mentoring; original research and software development; impactful and ethical practice; and service to the profession and to society. Among the nine early-career statisticians chosen this year were four IMS members.

Claire McKay Bowen, Lead Data Scientist, Privacy and Security, at the Urban Institute: *For contributions to the development and broad dissemination of Statistics and Data Science methods and concepts, particularly in the emerging field of Data Privacy, and for leadership of technical initiatives, professional development activities, and educational programs.*



Claire McKay Bowen

Jonas Peters, Statistics Professor in the Department of Mathematical Sciences at the University of Copenhagen: *For path-breaking contributions to statistical issues in connection with causality research, for an extraordinary active role in research dissemination and for outstanding inspiration of junior researchers.*



Jonas Peters

Aaditya Ramdas, Assistant Professor in the Department of Statistics and Data Science, and Machine Learning Department, at Carnegie Mellon University: *For significant contributions to sequential nonparametric inference, uncertainty quantification in machine learning, and statistical methods for reproducibility, as well as the development of an array of unique courses and tutorials, along with extensive mentorship and outreach activities.*



Aaditya Ramdas

Lingzhou Xue, Associate Professor of Statistics, Department of Statistics at Pennsylvania State University: *For his innovative contributions to the theory and methodology of high-dimensional statistics and statistical learning, and for his outstanding and prolific service to the profession and to society.*



Lingzhou Xue

You can read more about the Leadership Academy and the full list of 2021 winners at <https://community.amstat.org/copss/awards/leadership-academy>. More COPSS award announcements on the next page!

More Members' News

Committee of Presidents of Statistical Societies (COPSS) 2021 Awards

The Committee of Presidents of Statistical Societies has announced the recipients of its awards for 2021 (apart from the winner of the Presidents' Award, as this is announced in the COPSS session at JSM every year.)



Alicia Carriquiry

The winner of the F.N. David Award and Lectureship is **Alicia Carriquiry**, Iowa State University, *"for being an outstanding role model for female and Latin American statisticians and for statisticians striving for scientific impact; for influential Bayesian, forensics, transportation, and nutrition research; for effective leadership of multidisciplinary groups; for extensive engagement in the National Academies and professional statistical societies; and for advocacy for female and*

early-career statisticians." Winning the Distinguished Achievement Award and Lectureship this year is **Wing Hung Wong**, Stanford University. His citation reads, *"For his groundbreaking and fundamental contributions to statistical theory and applications, particularly in likelihood inference, Monte Carlo computation, Bayesian statistics, and computational biology."* Finally, the winner of the George W.



Wing Hung Wong



David Dunson

Snedecor Award is **David Dunson**, Duke University. David's citation reads, *"For seminal and consequential advancements in the theoretical and methodological underpinnings of Bayesian modeling and inference; for significant contributions in high-dimensional statistical inference, nonparametric Bayesian modeling, and their wide-ranging applications in biomedical and natural science."* The award recognizes his 2019 paper, joint with J.W.

Miller, "Robust Bayesian inference via coarsening" (*JASA*, 114, 1113–1125).

Look out for an article introducing these award winners in the next issue. You'll also find four IMS members who were among the newly selected members of the COPSS Leadership Academy on page 2.

Jewell receives Nathan Mantel Award

Nicholas P. Jewell has been honored with the ASA's 2021 Nathan Mantel Award, given every two years to a researcher for lifetime contributions to the development and application of statistical science to problems and issues in epidemiology.

Nicholas is Chair of Biostatistics & Epidemiology at the London School of Hygiene & Tropical Medicine, after a long career at the University of California, Berkeley, where he still holds an appointment as Professor of the Graduate School. He works on the statistical design and analysis of studies regarding the spread and control of infectious diseases.

RSS Research Prize: Chengchun Shi

The Royal Statistical Society's Research Prize for 2021 is awarded to **Chengchun Shi** for his impressive contributions to the statistical analysis of complex data. Of particular note is his paper "Maximin projection learning for optimal treatment decision with heterogeneous individualized treatment effects" (co-authored with Rui Song, Wenbin Lu and Bo Fu, *JRSSB*, 80, 681–702).

See the full announcement, and other RSS prizes, at <https://rss.org.uk/training-events/events/honours/>

🔗 = access published papers online

IMS Journals and Publications

Annals of Statistics: Ming Yuan, Richard Samworth
<https://imstat.org/aos>
 🔗 <https://projecteuclid.org/euclid.aos>

Annals of Applied Statistics: Karen Kafadar
<https://imstat.org/aoas>
 🔗 <https://projecteuclid.org/aoas>

Annals of Probability: Amir Dembo
<https://imstat.org/aop>
 🔗 <https://projecteuclid.org/aop>

Annals of Applied Probability: Francois Delarue, Peter Friz
<https://imstat.org/aap>
 🔗 <https://projecteuclid.org/aopap>

Statistical Science: Sonia Petrone
<https://imstat.org/sts>
 🔗 <https://projecteuclid.org/ss>

IMS Collections
 🔗 <https://projecteuclid.org/imsc>

IMS Monographs and IMS Textbooks: Nancy Reid
<https://www.imstat.org/journals-and-publications/ims-monographs/>

IMS Co-sponsored Journals and Publications

Electronic Journal of Statistics: Domenico Marinucci
<https://imstat.org/ejs>
 🔗 <https://projecteuclid.org/ejs>

Electronic Journal of Probability: Andreas Kyprianou
 🔗 <https://projecteuclid.org/euclid.ejp>

Electronic Communications in Probability: Giambattista Giacomini
 🔗 <https://projecteuclid.org/euclid.ecp>

Journal of Computational and Graphical Statistics: Tyler McCormick
<https://www.amstat.org/ASA/Publications/Journals.aspx>
 🔗 log into members' area at imstat.org

Statistics Surveys: David Banks
<https://imstat.org/ss>
 🔗 <https://projecteuclid.org/euclid.ssu>

Probability Surveys: Ben Hambly
<https://imstat.org/ps>
 🔗 <https://www.i-journals.org/ps/>

IMS-Supported Journals

ALEA: Latin American Journal of Probability and Statistics: Roberto Imbuzeiro Oliveira
 🔗 <http://alea.impa.br/english>

Annales de l'Institut Henri Poincaré (B): Grégory Miermont, Christophe Sabot
<https://imstat.org/aihp>
 🔗 <https://projecteuclid.org/aihp>

Bayesian Analysis: Michele Guindani
 🔗 <https://projecteuclid.org/euclid.ba>

Bernoulli: Mark Podolskij, Markus Reiß
<https://www.bernoulli-society.org/>
 🔗 <https://projecteuclid.org/bj>

Brazilian Journal of Probability and Statistics: Enrico Colosimo
<https://imstat.org/bjps>
 🔗 <https://projecteuclid.org/bjps>

IMS-Affiliated Journals

Observational Studies: Dylan Small
 🔗 <https://obsstudies.org/>

Probability and Mathematical Statistics: K. Bogdan, M. Musielak, J. Rosiński, W. Szczotka, & W.A. Woyczyński
 🔗 <http://www.math.uni.wroc.pl/~pms/>

Stochastic Systems: Shane Henderson
 🔗 <https://pubsonline.informs.org/journal/stsy>

Nan Laird: International Prize in Statistics

Continued from cover

Nan Laird began the work that would eventually lead to the International Prize in Statistics in 1982, as an assistant professor in the Harvard School of Public Health Biostatistics Department, collaborating with Harvard biostatistician Jim Ware. Ware was involved with the Harvard Six Cities Study, which followed over 8,000 participants across the US for more than a decade, regularly collecting data to investigate the effects of air pollution on lung functioning. Ware turned to Laird for help in developing methods to address some particularly tricky problems in the data.

At the time, most statistical methods required the data to be unrealistically orderly and complete. For example, researchers had to collect the exact same number of measurements from each participant on the same regular schedule—but in reality, participants often fail to show up for some appointments only to show up for later ones, or irregularly respond to researchers' requests at unscheduled times. The existing methods also did not give researchers the flexibility to incorporate the participants' individual characteristics, which were needed to address their study's questions—such as how a person's personal smoking behaviors interact with air pollution to affect their lung capacity, or how their change in body mass influences their overall health.

Laird's solution was to develop an integrated statistical framework that could handle all these problems. This approach, which she and Ware described in their 1982 *Biometrics* paper, "Random Effects Models for Longitudinal Data: An Overview of Recent Results," was flexible enough to accommodate real-world situations, including ones with missing data. It also let researchers fine-tune their approaches to capture each participant's individual changes over time, as well as the general effects across a population.

The paper went beyond new abstract theories, however. Realizing the need for practical methods, especially given the limitations of computing in the early 1980s, Laird and Ware introduced a novel computational approach for carrying out data analysis. Also, in a surprisingly modern and visionary move for the time, Laird and Ware developed and disseminated user-friendly software for others to use, which led to broad adoption of the new statistical framework by investigators.

Laird's Background

Nan Laird was born in Gainesville, Florida, in 1943, to a schoolteacher mother, who stayed at home to raise her and her older sister, and a political science professor father, who turned to state government and political work when the family moved to Tallahassee when Laird was three years old.

Math was Laird's favorite subject in school, and when she started Rice University in 1961 as an undergraduate, she initially majored in math. She quickly grew dissatisfied with her studies, however. Not only was it awkward to be the sole female in her mathematics course section, especially at a time when women were generally discouraged from pursuing studies in the sciences, but she also yearned to do something more practical than the theory she was encountering. She soon switched her major to French, then left Rice altogether after her junior year and moved to New York City.

A few years later, after another family move, Laird picked up her studies at the University of Georgia. This time, she started in computer science, hoping to find that elusive element of practicality she had missed in mathematics. She found it not in computers, which were just starting to become mainstream at the time, but in her statistical decision theory course. She was entranced by the idea that one could use math formulas to make life decisions, even mundane ones like whether to pack an umbrella in the morning. Hooked on statistics, she switched majors a final time and graduated with her BS in statistics in 1969.

Another move took Laird to Boston, where she worked as a computer programmer for a couple of years on the Apollo Man to the Moon Program at the Massachusetts Institute of Technology Draper Laboratory, running computer simulations to test the navigation system for the Apollo spacecrafts. The work convinced her she needed more education to keep advancing in her career, so she decided to pursue graduate studies in statistics.

Laird entered Harvard University as a doctoral student in statistics in 1971. She earned her PhD after four years and joined the faculty as an assistant professor in biostatistics. She remained at Harvard until her retirement four decades later.

Throughout her career, Laird has published three books and more than 400 papers, which have garnered more than 180,000 citations. She is a fellow of the American Association for the Advancement of Science, the American Statistical Association, and the Institute of Mathematical Statistics; an elected member of the International Statistical Institute; and the recipient of the Janet Norwood Prize and Samuel S. Wilks Award. Laird has served on many panels and editorial boards, including a 1986 National Academy of Sciences panel on airliner cabin environment, which led to the elimination of smoking on airplanes. Laird chaired the Harvard School of Public Health Department of Biostatistics from 1990–1999.

Laird lives in Cambridge with her husband. She has two children and three grandchildren.

Statistics societies condemn anti-Asian racism

A Joint Statement Condemning Anti-Asian Racism from the COPSS Societies: ASA, ENAR, IMS, SSC and WNAR

The Committee of Presidents of Statistical Societies (COPSS) condemns in the strongest possible terms all forms of racism and hate. The recent, horrendous event in Atlanta that targeted Asians and Americans of Asian ancestry in the United States is but one more manifestation of the systemic racism and exclusion that many of our colleagues and neighbors suffer routinely.

The FBI reports that hate crimes in the United States are at their highest point in over a decade. Hate crimes are motivated by biases towards a person's race, religion, sexual preference and other categories. Critically for us as statisticians, violence against targeted groups occurs when we fail to make our profession — and all of society — more diverse and inclusive. Through our skills in quantitative reasoning, we are best equipped to generate evidence on impacts of inherent biases on targeted groups so that informed actions are taken to prevent hate crimes.

While Asian, Asian-Americans and Pacific Islanders (AAPI) are not alone in terms of how frequently they are subjected to hate and prejudice, 2020 saw a sharp increase — as high as 150% relative to earlier years — in the number of crimes reported by AAPI persons. This is intolerable. COPSS, on behalf of its partner societies and all their members, stands firmly in support of all Asian and Asian-American statisticians.

As a profession, we have benefited from the many and important contributions of our AAPI colleagues. There is no question that the influx of talent from other nations, but particularly from Asian countries, has enabled the United States to sustain its leadership role in science, technology, and innovation. Science and technology are the engine that drives economic development and opens more opportunities for advancement in society.

COPSS states in no uncertain terms that hate, prejudice, and exclusion have no place in any of its partner societies and will not be tolerated. We all need to do our part to build a more just society. COPSS has established a Diversity, Equity, and Inclusion Taskforce to develop strategies and activities to ensure that our profession is welcoming to all, regardless of race, gender, sexual orientation, religion and any other personal attribute. Furthermore, COPSS will continue to reflect on its own role in the perpetuation of any implicit biases against any member of our professional community by examining the fair representation of all deserving statisticians (including members of Asian and Pacific Islander descent) among recipients of COPSS awards, identifying any systematic underrepresentation or historical exclusion, and implementing more equitable solutions.

We all need to do more to promote justice, fairness, and respect. Let us commit to doing everything we can to ensure that those values guide our profession. Please join COPSS in expressing its deepest appreciation to all its members in these difficult times and in expressing its solidarity with the entire Asian American community, and especially our cherished members of Asian descent and their loved ones.

American Statistical Association (ASA)

Eastern North American Region of the International Biometric Society (ENAR)

Institute of Mathematical Statistics (IMS)

Statistical Society of Canada/Société statistique du Canada (SSC)

Western North American Region of the International Biometric Society (WNAR)

Recent papers: Two Open-Access journals

Stochastic Systems

Focusing on the interface of applied probability and operations research, *Stochastic Systems* is the flagship journal of the INFORMS Applied Probability Society and is published through a cooperative agreement between INFORMS/APS and IMS. This open-access journal seeks to publish high-quality papers that substantively contribute to the modeling, analysis, and control of stochastic systems. The contribution may lie in the formulation of new mathematical models, in the development of new mathematical methods, or in the innovative application of existing methods. A partial list of applications domains that are germane to this journal include: service operations; logistics, transportation and communications networks (including the Internet); computer systems; finance and risk management; manufacturing operations and supply chains; and revenue management.

Read it at <https://pubsonline.informs.org/toc/stsy/current>

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A Simple Markovian Spreading Process with Mobile Agents	REFAEL HASSIN; 19–33
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A Diffusion-Based Analysis of a Multiclass Road Traffic Network	MICHEL MANDJES, JAAP STORM; 60–81

Probability Surveys

Probability Surveys is a peer-reviewed electronic journal which publishes survey articles in theoretical and applied probability. The style of articles may range from reviews of recent research to graduate textbook exposition. Articles may be broad or narrow in scope. The essential requirements are a well specified topic and target audience, together with clear exposition. The journal is sponsored by the Institute of Mathematical Statistics and by the Bernoulli Society. *Probability Surveys* is an Open Access journal. The full text of each article published is freely available to all readers.

Read it at <https://projecteuclid.org/journals/probability-surveys/current>

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Time and place of the maximum for one-dimensional diffusion bridges and meanders	ROBIN KHANFIR; 1–43
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Activated Random Walks on \mathbb{Z}^d	LEONARDO T. ROLLA; 478–544
Local characteristics and tangency of vector-valued martingales	IVAN S. YAROSLAVTSEV; 545–676
The infinite extendibility problem for exchangeable real-valued random vectors	JAN-FREDERIK MAI; 677–753

***Probability Surveys* is among the range of Open Access journals that IMS offers (the others are *Electronic Communications in Probability*, *Electronic Journal of Probability* and *Statistics Surveys*). Donations are welcome to the IMS Open Access Fund: <https://www.imstat.org/shop/donation/>**

Anirban's Angle: What are you drinking?

Contributing Editor Anirban DasGupta writes:

Sreekumar Nambiar and I graduated the same year from the ISI in Calcutta. A few months ago, as we were shooting the breeze, Sreekumar asked if tea is more of a common man's drink than coffee. I didn't know. But it reignited in me that folklore that tea and coffee both give some people some protection against some diseases. Naturally, I did not have easy access to controlled world-wide experiments on this matter. However, with some patience and effort, I could get metadata on it sitting at my desk. I decided to look at rates of disease incidence for heart disease and cancer of all types, and data on consumption per capita of tea, coffee, cigarettes, alcohol of all types, and GDP per capita for 40 countries scattered across the world. I was curious how consumption of tea and coffee relate to disease incidence. Do the metadata suggest any links? Of course, no causation is implied. But at some level, I was in for at least a mild dose of surprise. I thought I would share it with you.

I want to emphasize that metadata wouldn't be as informative as micro-level data from controlled experiments, but metadata isn't useless. Second, no applied statistics methodology ever goes unquestioned. For instance, I don't look at partial correlations here. And third, the topic is worth a peer reviewed full length journal article.

A (non-alphabetical) list of the 40 countries I considered is: South Korea, Australia, Hungary, Croatia, Russia, Poland, Rwanda, Denmark, Kenya, The Netherlands, China, Sudan, Turkey, Syria, Cuba, Myanmar, South Africa, France, Ireland, Greece, UK, Colombia, Argentina, Germany, Chile, Egypt, Jamaica, USA, New Zealand, Italy, Austria, Canada, Israel, Brazil, Sweden, Nigeria, Japan, Iran, India and Mexico.

I looked at these seven variables: Death rates (per 100,000) from [1] any type of cancer, from [2] heart disease, and consumption per capita per year of [3] cigarettes, [4] any type of alcohol (litres), [5] coffee and [6] tea (kg), and [7] per capita GDP in thousands of dollars.

I calculated the (albeit unsophisticated) correlation matrix:

$$R = \begin{pmatrix} 1 & .193 & .376 & .247 & -.136 & .028 & -.033 \\ & 1 & .248 & -.354 & -.484 & .040 & -.482 \\ & & 1 & .146 & .222 & .005 & .376 \\ & & & 1 & .354 & -.164 & .510 \\ & & & & 1 & -.313 & .712 \\ & & & & & 1 & -.080 \\ & & & & & & 1 \end{pmatrix}.$$

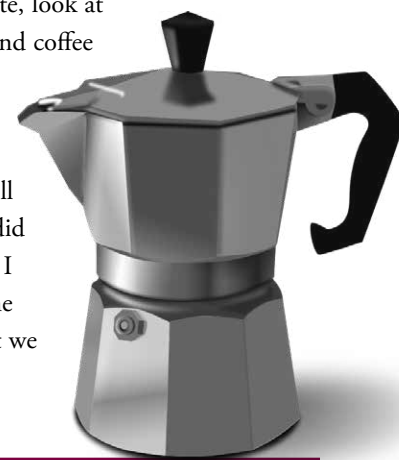
What struck me are the correlations between coffee and tea consumption and death rates from heart disease: $-.484$ for coffee, and $-.354$ for tea. In countries with higher coffee consumption, death

rates from heart disease appear to be somewhat lower. Turning to cancers, the correlation with coffee drinking is $-.136$, and that with tea is $.028$. Neither of the two appears to lower deaths from cancers, even more so for tea. But, as one may surmise, cigarette smoking is visibly positively correlated with deaths from cancers.

Now let us turn to alcohol and cigarettes against GDP. The correlation of GDP with alcohol is $.510$ and with cigarette consumption is $.376$. In richer countries, there is more alcohol consumption and more smoking. And to come back to my friend Sreekumar's question, whether coffee is for the elite, look at that $.712$ correlation between GDP and coffee consumption!

At some intuitive level, many of these correlations make sense, although not the exact values. But still this diminutive statistical adventure did spring a surprise or two on me when I weighed coffee against tea and saw the prowling silhouette of the villain that we were all told smoking is.

Now, where is my Gevalia?



To give an overview, here is that data for 20 of the 40 countries:

Country	1	2	3	4	5	6	7
Australia	106	44	917	12	8	1	53
Russia	153	226	2295	15	1	1	29
Rwanda	145	73	94	10	0	0	2
China	135	114	2043	7	0	1	17
Turkey	131	123	1771	2	1	3	28
Cuba	127	92	234	5	1	0	3
Myanmar	127	88	227	1	1	1	5
France	125	31	1090	12	6	0	49
Ireland	123	61	977	12	2	2	88
UK	122	48	828	12	3	2	49
Colombia	121	110	351	4	1	0	16
Egypt	118	272	1449	0	0	1	12
USA	114	79	1017	9	4	1	65
Israel	110	38	1281	3	4	0	42
Brazil	109	79	334	9	2	2	15
Nigeria	103	197	163	10	0	0	5
Japan	103	32	1583	7	4	1	43
Iran	100	183	937	1	0	2	15
India	75	161	89	4	0	1	7
Mexico	72	87	327	7	1	0	20

Preview of Special IMS Lectures

IMS Medallion Lecture: Axel Munk



Axel Munk

Axel Munk is the founder and director of the Felix-Bernstein Institute for Mathematical Statistics in the Biosciences at the Georg-August University of Göttingen. Moreover, he is a Max Planck fellow at the Max Planck Institute for Biophysical Chemistry where he is the head of the research group for Statistical Inverse Problems in Biophysics. In 1994, he received his doctoral degree in Mathematics at the University of Göttingen, and held positions at Ruhr-University Bochum, Technical University Dresden and Paderborn University, before he joined the department of Mathematics and Computer Science at the University of Göttingen in 2002. He was elected a member of the Göttingen Academy of Sciences and Humanities in 2012. His interests range from fundamental statistical research to the development of methods and software for the analysis of experimental data in the lab sciences, in particular in biochemistry, structural biology, molecular genetics, and cell microscopy. He is a board

member of the cluster of excellence “Multiscale Bioimaging: From Molecular Machines to Networks of Excitable Cells” and of the collaborative research center “Mathematics of Experiment”. Aspects of his research have been highlighted as editor’s picks, spotlights and discussion papers in several journals. His work on nanoscale statistics has been reviewed in the *Research Features Magazine*. Axel Munk is an elected member of the ISI and an IMS Fellow. He has served the IMS in several capacities, including currently as a council member. He will deliver his Medallion Lecture at the Joint Statistical Meetings in Seattle, August 7–12, 2021.

Optimal Transport-based Data Analysis: Inference, Algorithms, Applications

Optimal transport (OT) has a long history, which originates in the 18th century with Gaspard Monge’s physical considerations of mass transportation and his studies on optimal spatial allocation of resources. Since then it has undergone a flourishing mathematical development and has influenced and shaped various areas within mathematics including analysis, probability, statistics and optimization. In parallel, it also has been proven to be a remarkably rich and fruitful concept for various other disciplines, such as economic theory, finance and more recently, computer science, machine learning and statistical data analysis.

In its most fundamental form optimal transport reduces to an assignment problem, which is a combinatorial optimization problem and NP hard in general. In the first half of the last century, Leonid Kantorovich bypassed this issue as he suggested a relaxation of OT as a probability mass transportation problem—which laid the foundations of linear programming. Since then, the computation of OT is a highly active field of research. Modern methods often exploit duality, the specific structure of the ground space and of the cost functional. In fact, due to such computational progress and the flexibility of OT, various concepts for OT data analysis (OTDA) are beginning to find its way into novel areas of applications including tomography, cell biology and geophysics, to mention a few. Nevertheless, OTDA computation still is a bottleneck when processing millions of data, highly relevant to the aforementioned applications. This becomes even more critical for related but more

complex tasks such as multi-marginal transport, or transport problems, which are to be solved up to isometries of the ground space resulting in the Gromov–Wasserstein transport.

Hence, despite its great conceptual appeal and certain computational progress, OTDA is still in its infancy. This also concerns the development of statistical methodology and theory.

In this talk we will discuss some recent developments in OTDA at the cutting edge of statistical methodology and computation. This includes OT-baycenters, which are summary measures of data with complex geometric structure, as well as novel ways to measure dependency. Mathematical tools are limit laws and risk bounds for empirical OT plans and distances on finite and discrete spaces. Proofs are based on a combination of sensitivity analysis from convex optimization and discrete empirical process theory. From this, we obtain methods for statistical inference, fast simulation and for fast randomized computation of OTDA tasks in large scale data applications at pre-specified computational cost. The performance of OTDA is illustrated in various computer experiments and on data from structural biology and super-resolution cell microscopy.

This talk surveys work over the last years. Collaborations with Florian Heinemann, Shayan Hundrieser, Marcel Klatt, Facundo Memoli, Giacomo Nies, Katharina Proksch, Max Sommerfeld, Thomas Staudt, Carla Tameling, Zhengchao Wan, Christoph Weitkamp and Yoav Zemel are gratefully acknowledged.

IMS Lawrence Brown PhD Student Award: Xin Bing

Xin Bing is a fifth year PhD student in the Department of Statistics and Data Science at Cornell University, advised jointly by Florentina Bunea and Marten Wegkamp. Before moving to Cornell, he received a BS in Mathematics in 2013 from Shandong University, China, and an MS in Statistics in 2016 from the University of Washington, Seattle.

His research interests generally lie in the development of new methodology with theoretical guarantees to tackle modern statistical problems such as high-dimensional statistics, low-rank matrix estimation, multivariate analysis, model-based clustering, latent factor models, topic models, minimax estimation, high-dimensional inference, and statistical and computational trade-offs. He is also interested in applications of statistical methods to genetics, neuroscience, immunology and other areas.

Xin will deliver this lecture as part of the Lawrence Brown PhD Student Award session, at the Joint Statistical Meetings in Seattle, August 7–12, 2021.



Xin Bing

Inference in latent factor regression with clusterable features

Regression models, in which the observed features $X \in R^p$ and the response $Y \in R$ depend, jointly, on a lower dimensional, unobserved, latent vector $Z \in R^K$, with $K \ll p$, are popular in a large array of applications, and mainly used for predicting a response from correlated features. In contrast, methodology and theory for inference on the regression coefficient $\beta \in R^K$ relating Y to Z are scarce, since typically the unobservable factor Z is hard to interpret. Furthermore, the determination of the asymptotic variance of an estimator of β is a long-standing problem, with solutions known only in a few particular cases.

To address some of these outstanding questions, we develop inferential tools for β in a class of factor regression models in which the observed features are signed mixtures of the latent factors. The model specifications are both practically desirable, in a large array of applications, render interpretability to the components of Z , and are sufficient for parameter identifiability.

Without assuming that the number of latent factors K or the structure of the mixture is known in advance, we construct computationally efficient estimators of β , along with estimators of other important model parameters. We benchmark the rate of convergence of β by first establishing its ℓ_2 -norm minimax lower bound, and show that our proposed estimator $\hat{\beta}$ is minimax-rate adaptive. Our main contribution is the provision of a unified analysis of the component-wise Gaussian asymptotic distribution of $\hat{\beta}$ and, especially, the derivation of a closed form expression of its asymptotic variance, together with consistent variance estimators. The resulting inferential tools can be used when both K and p are independent of the sample size n , and also when both, or either, p and K vary with n , while allowing for $p > n$. This complements the only asymptotic normality results obtained for a particular case of

the model under consideration, in the regime $K = O(1)$ and $p \rightarrow \infty$, but without a variance estimate.

As an application, we provide, within our model specifications, a statistical platform for inference in regression on latent cluster centers, thereby increasing the scope of our theoretical results.

We benchmark the newly developed methodology on a recently collected data set for the study of the effectiveness of a new SIV vaccine. Our analysis enables the determination of the top latent antibody-centric mechanisms associated with the vaccine response.

Submit your Contributed Abstract for JSM 2021 before April 14, 2021

With the pandemic continuing to evolve, JSM 2021 will likely look a little different. Organizers are making plans for hybrid participation and have rethought parts of the program.

*Registration will not be required to submit an abstract, but will be required in order to present. All JSM presentations may be given on any topic of statistical interest; however, authors are encouraged to submit abstracts on the theme set by 2021 ASA President Rob Santos: **Statistics, Data, and the Stories They Tell**. Additionally, abstracts with a primary focus on statistical applications are encouraged.*

All contributed presentations will follow a speed session format and come in two parts: a live, 3–4-minute overview of your presentation, plus a pre-recorded, 15-minute presentation for on-demand viewing.



Sound the Gong: Back on the Road

Ruobin Gong is an Assistant Professor of Statistics at Rutgers University. She joins us as a new Contributing Editor, starting her “Sound the Gong” column by reflecting on what we have learned from the past year of not being able to travel...



One of the most rewarding aspects of our profession is the plentiful opportunities to travel. As academics, we travel often to perform our duties at the highest level. Every year, we attend conferences, workshops and symposiums, and give talks at other institutions. Through these venues, we disseminate our knowledge, learn from our colleagues, and stay up-to-date with cutting-edge research questions that illuminate our paths for explorations ahead. For some of us (such as myself), traveling has an additional therapeutic effect, as it brings naturally the joy of life into work. As a kid I traveled frequently with my parents, and took great pride in filling up my passport with colorful stamps, and collecting souvenir magnets that populated our fridge door. I did not imagine that touristy activities would feel more gratifying having just fulfilled my professional duties. A casual stroll on the stone-lined path by the Graslei in Ghent, a tram ride up the astonishing coastal hills of Lugano, a quenching sip of sweet mint tea after a sweaty walk through the souks of Marrakesh -- moments became more memorable after delivering a talk or participating in a stimulating round of exchanges with friends and colleagues.

The COVID-19 pandemic quarantined us out of all this. Over the past year or so, we have come to grasp with the new reality in which we not only must teach remotely, but also conduct academic communications via Zoom, WebEx, Skype and the like. Some conferences were postponed, as the organizers decided to wait for better days to return. Others adopted a virtual format, and achieved varying degrees of success. Not everyone adapted to the new norm without some loss of efficiency. Our students told us that they suffered from “Zoom fatigue”. As teachers, we sympathized with them, while at the same time concealing from them the fact that we, too, were tired from lecturing without seeing their faces and hearing their voices. Attention management became a challenge as well. I, for one, was guilty of occasional “multi-tasking” during virtual seminars. While the camera was off and the microphone was muted, I found myself attending to emails while the speaker was still enthusiastically discussing the slides, quite oblivious to what was going on — and perhaps unaware of my presence in the first place.

Another regret to “going virtual” is that we can no longer have visitors in person. I missed the many pleasant dinners with guest speakers, joined by my colleagues as we treated them to the local culinary delights as a token of gratitude. There was always a reward for everyone at the table. For the past five or so years, Rutgers statistics and philosophy departments jointly organized the Foundation of Probability seminar series. The series attracted speakers as well as attendees from a diverse range of interests. Every week we met for two hours for an interactive deep dive under the speaker’s lead. Afterwards, we routinely visited a Mediterranean restaurant in downtown New Brunswick, to continue the conversation in a more casual setting. For all us regular hosts, the restaurant staff learned by heart who fancied a lentil soup as appetizer, and who did not like feta cheese in their dishes. It was over baskets of warm pita breads and plates of fragrant hummus and baba ganoush, that our speakers shared their behind-the-scenes stories. What inspired them to embark on the project, what other interests and passions do they have, as well as their experiences at conferences and meetings, and even at their department and in their discipline in general.

Regrets aside, we have also inadvertently benefited from the rapid adoption and normalization of virtual academic communications. After all, traveling is both costly and time-consuming. Doing away with it, especially when the academic year is in session, presents a great logistical simplification. Prior to last year, to accommodate travel to conferences and talks I needed to reschedule on average one week’s worth of teaching per semester. Since the lockdown, none of that was necessary. I could hang up a Zoom call, and in a matter of minutes transition into teaching. In the past, the Foundation seminars also prioritized speakers in the Greater New York area and the northeastern part of the US, for ease and cost-effectiveness. Since the pandemic, we have hosted virtual speakers from as near as Chicago, Kansas and California, and as far as England, Belgium, Australia and China. At the beginning of the year, the seminar pulled off a panel discussion with multiple participants joining from different continents. All this was accomplished at minuscule expense, namely the electricity it cost to support this multi-way digital communication, which on no scale can be compared to the fatigue that our faraway guests graciously endured to accommodate the US Eastern time schedule.

Reflecting on all the in-person conferences and workshops I have attended over the years, those that have proven to be consistently the most intellectually stimulating are the themed, single-track ones held at relatively small scales. To gather several dozen researchers in the same room creates an undeniable catalytic

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Photo: Shawn Ang / Unsplash

Remember airport departure lounges? Ruobin Gong does, and she's looking forward to getting back out there!

effect for novel ideas. The attendees, by way of traveling miles and miles to appear in front of everyone else, commit their undivided attention to that community's conversation. No matter how drastically different the backgrounds and viewpoints of the attendees, those two or three days at the conference will immerse everyone in the same physical experience. They will have heard the same speakers, weighed the same questions bearing on their minds, even possibly noticed the same inconsequential details, such as that the coffee on the reception desk had run out way too early in the day. Every participant can raise their hand to ask a question, or walk over to another participant to start a conversation—or even a debate, if necessary. The conference series organized by the BFF (<http://bff-stat.org/>) and SIPTA (<http://www.sipta.org/>) communities are excellent examples of the many highly engaging meetings that gather researchers with mutual interests in all subject areas of probability and statistics.

While traveling is on a pause, it also allows us time to contemplate the environmental impact of excessive flying. Commercial aviation contributed to 2.6% of global carbon dioxide emissions in 2018, and has been growing at a rapid 5% annual rate¹. Last month, the Philosophy of Science Association (PSA) climate change task force initiated a survey among its members, to gauge attitudes

towards future conference and workshop planning. A tradeoff calculation is called for, as we balance the facilitation of scholarly communications through in-person gatherings, against the carbon footprint and other adverse environmental effects these meetings may bring.

Modern science is a social institution. The creation, evolution and dissemination of knowledge both draw from and feed into the collective wisdom of the scientists. Having been confined to our homes for a full year and change, we come to reckon with the fact that in-person communication is an indispensable element of productive academic activities. We treasure more than ever the social element of our profession, and at the same time recognize the societal impact of our customary practices. As we slowly but steadily approach victory in our battle with the pandemic, universities are making plans to safely reopen their classrooms to welcome students in the fall. We look forward to getting reacquainted, not only with our dear friends and colleagues, but also with a redefined life back on the road.

¹ Staples, M.D., Malina, R., Suresh, P., Hileman, J.I., & Barrett, S.R. (2018). Aviation CO₂ emissions reductions from the use of alternative jet fuels. *Energy Policy*, 114, 342–354.

OBITUARY: Leo Goodman

1928–2020

Leo Goodman, one of the towering figures in statistics, and particularly in its application to sociology, died on December 22, 2020, in Berkeley, California, at the age of 92.

Leo was born in Brooklyn in 1928. He obtained a BA in mathematics and sociology in 1948 from Syracuse University, where the great European mathematicians, Charles (Karl) Loewner and Lipman Bers, were then teaching. At the urging of Bers and others, Leo went on to graduate study in mathematics at Princeton, rather than in sociology at the University of Chicago. He obtained his PhD under the supervision of S.S. Wilks and J.W. Tukey in 1950.

He was then appointed as Assistant Professor of Sociology and Statistics at the University of Chicago. He progressed through the ranks at Chicago and remained there, except for sabbaticals and leaves until 1986, when, after a stay at the Stanford Center for Advanced Study in the Behavioral Sciences, he moved to the University of California at Berkeley as Professor of Statistics and Sociology.

Among many honors, he was elected in the 1970s as a member of the National Academy of Sciences, the American Academy of Arts and Sciences, and the American Philosophical Society, and received honorary Doctorates from the Universities of Syracuse and Michigan.

Goodman's major contributions to statistics were in discrete data analysis. A series of papers, joint with William Kruskal, on measures of association in contingency tables, published in *JASA* between 1954 and 1963, were early successes. This work had a major impact, particularly in the social sciences, and the measures unified models

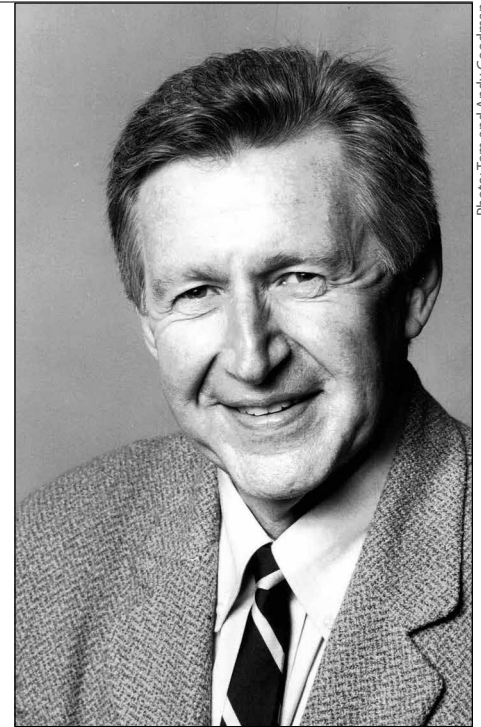
and concepts touched on by Fisher, Yule, and Pearson. He returned to this area many times in articles in *JASA*, *Biometrika*, *JRSS* and the *Annals of Statistics*, and in journals and books in several fields of application, including the *American Journal of Sociology*, the *Annals of Human Genetics*, *Econometrica* and others.

Overviews and novel results in this area appeared in papers based on his Fisher Lecture in 1968 and his Rietz Lecture in 1985. Although loglinear models were introduced by Birch, Leo developed the ideas greatly in his Fisher lecture and in a 1970 *JASA* paper on the multivariate analysis of qualitative data. Loglinear models, as we know, generalized to Generalized Linear Models and then to Generalized Additive Models and have remained important tools of statistics. A paper written with T.W. Anderson, which appeared in 1957, was one of the foundational papers on inference in Markov Chains. Other work included a forerunner of the EM algorithm in a 1974 paper in *Biometrika*.

A view of Goodman's great impact on many fields may be gleaned from an interview by Mark Becker in *Statistical Science* in 2009 and from his obituary in the *New York Times* on February 18, 2021.

An unexpected example of the breadth of his reach is the MacLaren Advertising Research Award for 1966, presented to him by the Canadian Advertising Research Foundation, in recognition of a paper with Hans Zeisel, a renowned legal scholar.

In addition to his talents as a scientist, Leo was a delightful man with an optimistic view of life. The Becker interview passes at length through his rich life and experiences and, along the way, reveals his talents as a



Leo Goodman

Photo: Tom and Andy Goodman

raconteur. An example not mentioned in that paper is his story of an experience as a Fellow of Clare College, Cambridge, when he visited as a Guggenheim Fellow in 1957. He was not familiar with college practices and had found a new interest in horseback riding. Not realizing that dinner that night was formal, he arrived in his riding clothes. He found himself meeting the Master of the college and a distinguished guest, formally dressed. He was rescued by the Master, who introduced him to the guest and mentioned that Leo had just arrived from the United States and that his baggage had not yet arrived. Many younger colleagues, including myself and my wife Nancy, felt fortunate to know him. We will miss him.

*Peter Bickel, Professor Emeritus
and Professor of the Graduate School,
University of California, Berkeley*

OBITUARY: Donald A.S. Fraser

1925–2020

On December 21, 2020, Canada and the world lost one of their most eminent and influential statisticians, **Donald Alexander Stuart Fraser**, OC, FRSC, who passed away at the age of 95. By his side was his wife Nancy Reid, herself a distinguished statistician.

Don's exceptional path as a scientist, which spanned over 70 years, was characterized by creative thinking, deep intuition, and a singular passion for statistics. As the author of over 280 articles, two research monographs and three widely used textbooks which were the first exposure to the subject for generations of students in the 1950s, 60s and 70s, he had a profound and lasting influence on the advancement of the field in Canada and internationally.

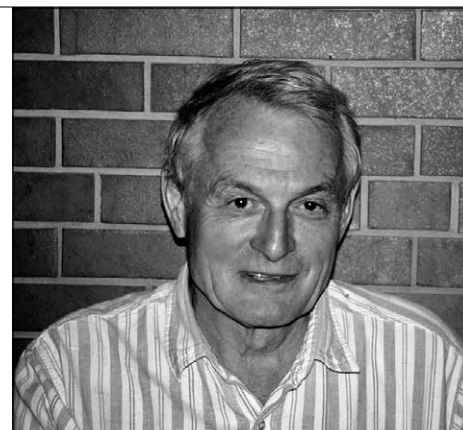
Based at the University of Toronto throughout his career, which began in 1949, Don was for decades the foremost intellectual leader of the discipline in Canada. He schooled many generations of statisticians and data scientists, supervising 55 PhD students. He played a key role in the establishment of his university's Department of Statistical Sciences, serving as its first chairman from 1977 to 1983. His stature attracted talent and helped the University of Toronto to become the center of excellence in statistics which it remains to this day. He was also involved in the creation of a national statistical association and brought prestige to *The Canadian Journal of Statistics (CJS)* by serving as editor-in-chief from 1977 to 1980. He continued to exercise leadership beyond his retirement in 1986, spending eight years as a Professor at York University, where he helped to build up statistics.

Elected to the Royal Society of Canada at the age of 42, Don was the first recipient of the Gold Medal of the Statistical Society

of Canada (SSC) in 1985. He later received honorary degrees from the University of Waterloo (1992) and the University of Toronto (2002), and was appointed Officer of the Order of Canada in 2011 in recognition of his contributions to science and society. His accolades include fellowships in the Institute of Mathematical Statistics (1954), the Royal Statistical Society (1956), the American Statistical Association (1962), the American Association for the Advancement of Science (1971), and the American Mathematical Society (2015), as well as an elected membership in the International Statistical Institute (1962). Moreover, he was the 1990 recipient of the R.A. Fisher Award and Lectureship, became an honorary member of the SSC in 1991, and received the Gold Medal of the Islamic Statistical Society in 2000.

Don was born in Toronto on April 29, 1925, to physician Maxwell John Fraser and his wife Ailie Jean Stuart. Raised in Stratford, Ontario, he attended St. Andrew's College in Aurora from 1939 to 1942, and the University of Toronto from 1942 to 1947, completing a BA in mathematics, physics and chemistry in 1946 and an MA in 1947. He distinguished himself very early as a Putnam fellow and member of the first-place team in the Putnam international mathematics competition in 1946. This singular achievement qualified him for admission and a graduate scholarship at Princeton University, where he completed his PhD within two years. It is there that, under the mentorship of John Tukey and Samuel Wilks, he specialized in statistics, which was then a newly developing field.

Upon graduating from Princeton in 1949, Don returned to the Department of Mathematics at the University of Toronto as an assistant professor of statistics. He



Don Fraser

quickly acquired a reputation both in teaching and research, and became a full professor at the age of 33. He was responsible, virtually single-handedly, for developing statistics at his institution. He succeeded in building a strong and broadly based research group there; many of his students became successful academics in Canada and abroad. While his own research was focused on theory, he recognized early the importance of statistical computing and the need to develop infrastructure and to hire in that field.

From his exchanges in the early 1950s with Sir Ronald A. Fisher to the very end of his career, Don's work was marked with audacity and extraordinary originality. He quickly became one of the early leaders in pedagogy by writing two widely used textbooks: *Nonparametric Methods in Statistics* (1957) and *Statistics: An Introduction* (1958). As his reputation in both research and teaching grew, these books became classic references. In 1976 he wrote a third book, *Probability and Statistics: Theory and Applications*, that was also well received.

From the beginning of his career, Don made many highly original and important contributions to statistical theory. One of the most widely cited is a landmark paper called "Structural probability and a generalization" (*Biometrika*, 1966). Authored solo, as were most of his writings between 1951 and 1970, this paper provided the outline for a new approach to inference called *structural inference*, which used

Continues on page 14

Donald Fraser, 1925–2020

Continued from previous page

in an essential and innovative way the mathematical structure of a wide class of stochastic models. With colleagues and students, Don later developed and extended this theory in a large number of research papers, and in the research monographs *The Structure of Inference* (1968) and *Inference and Linear Models* (1979). In recognition of the importance of this contribution, Don's 1966 paper was reprinted in *Breakthroughs in Statistics: Foundations and Basic Theory* (Springer, 1992).

Don's work on structural inference emphasized the central role of the likelihood function in statistical inference. This point of view, which is broadly accepted today, ran counter to widely held views at the time. In the 1980s and 1990s, much research was devoted to approximations in the area of likelihood asymptotics. Don's research, conducted in large part with Nancy, was at the forefront of these developments, from his groundbreaking introduction of the tangent exponential model (*Biometrika*, 1990) to his paper with Davison, Reid, and Sartori on directional inference (*Journal of the American Statistical Association*, 2014). His contributions to the asymptotic theory of inference, combined with his earlier work on structural inference, helped to shed new light on the interface between the Bayesian and Fisherian schools of thought in unexpected ways. His 2010 paper in the *Journal of the Royal Statistical Society, Series B*, coauthored by Reid, Marras, and Yi, directly addressed this debate.

Throughout his career, Don maintained an exceptionally active program in research, publishing important work in all the leading statistical journals. With characteristic originality, he saw links between likelihood inference and areas which most people would have viewed as tangential to his

interests. For example, his 2007 paper with Bédard and Wong, published in *Statistical Science*, was noteworthy for proposing an innovative approach to Markov chain Monte Carlo sampling, whose computational aspects he developed to considerable success.

Don's influence in research was profound, but perhaps more striking still is the influence he had on several generations of scientists. Among many others, David Brillinger, Arthur Dempster, and Stephen Fienberg repeatedly acknowledged the importance of Don's mentorship in starting their careers. Don's long list of PhD graduates includes three SSC Gold Medalists, Irwin Guttman (1955), Ivan Fellegi (1961), and David Andrews (1968), but also Keith Hastings (1962) of Metropolis–Hastings fame, Ross Prentice (1970), former director of the Public Health Sciences Division at the University of Washington, Kai-Wang Ng (1975), professor at the University of Hong Kong, former *CJS* Editor Grace Yi (2000), as well as several other research statisticians working in Toronto and elsewhere in Canada. Don also had a special connection with Nancy Reid, a kindred spirit with whom he published over 50 papers—and had two daughters.

Don's personal life was as extraordinary as his professional accomplishments. He was a man of insatiable curiosity, always in search of the unique and the unconventional, highly energetic and constantly seeking to test his limits, both mental and physical. He spoke enthusiastically of the canoe trip he once made in his twenties to James Bay and he remained, late in his life, an avid swimmer, a waterskier in the summer, and a snowmobiler in the winter. His lifelong interest in architecture also occupied his mind. At Lake Temagami, where he spent nearly all his summers, he

oversaw the construction of several cabins, docks, etc. His passion for building is also immortalized in the “Fraser House” at 4 Old George Place, in Toronto's neighborhood of Rosedale, which he commissioned the famous architect Ronald J. Thom to design for him in 1964.

Don leaves in mourning his wife Nancy, their daughters Ailie and Donelle, five other daughters from previous marriages, Julie, Danae, Maia, Andrea, and Ailana (the latter three are professors of mathematics in Canadian universities), as well as several grandchildren and great grandchildren. He will continue to live on through the many scholarly contributions that made him a titan of statistics, but also through the positive influence he had on so many people, including over 350 academic descendants, and the lasting impression he gave of a kind, joyful, humorous, enthusiastic, energetic, hard-working, clever human being.

In his 2009 book entitled *Sum: Forty Tales from the Afterlives*, David Eagleman wrote: “There are three deaths: The first is when the body ceases to function. The second is when the body is consigned to the grave. The third is that moment, sometime in the future, when your name is spoken for the last time.” Speaking of the third death, Don Fraser will outlive most of us.

Additional information on Don's career and his views on statistics and science can be found in his discussion with Tom DiCiccio and Mary Thompson published in the May 2004 issue of *Statistical Science* (vol. 19, no. 2, pp. 370–386). An interview of Don is also available from the Videotape Archives of the American Statistical Association.

*Christian Genest,
McGill University, Montréal, Canada*



Student Puzzle Corner 33

Have you solved Anirban DasGupta's palindrome problem in the domain of probabilistic number theory? It was posed in the last issue. We reprint it here:

A positive integer is called a palindrome if it reads the same from left to right and right to left. All single digit numbers, namely, 1, 2, ..., 9 are regarded as palindromes; 101 is a palindrome, or 29092, but not 111011, or 022. A zero in the first position is not allowed in the definition of a positive integer.

For $n \geq 1$, define X_n to be a randomly chosen palindrome of length exactly equal to n . For example, X_3 could be 101. Also define Y_n to be a randomly chosen palindrome less than or equal to 10^n .

For example, X_3 could be 1, or 99, or 505, etc.

Here are the parts of our problem.

(a) Calculate $E(X_2)$, $E(X_3)$ exactly; i.e., write the answers as rational numbers.

(b) Calculate $E(X_4)$, and then, $E(Y_2)$, $E(Y_3)$, $E(Y_4)$ exactly.

(c) Write a formula for $E(X_n)$ for a general n . Be careful about whether n is odd or even.

(d) Calculate $E(Y_8)$, $E(Y_{12})$ exactly, and recall from part (b) $E(Y_4)$.

(e) Conjecture what $E(Y_n)$ is for a general even n .

Student members of IMS are invited to submit solutions to bulletin@imstat.org (with subject "Student Puzzle Corner").

The names of student members who submit correct solutions, and the answer, will be published in the issue following the deadline.

The Puzzle Editor is Anirban DasGupta. His decision is final.

Deadline: April 25, 2021

Remembering Gordon Harrington, 1925–2015

Gordon Mackenzie Harrington, who was a longtime member of IMS, died in 2015 aged 90, but we only learned about his death recently. The following is from an obituary that appeared in the *Waterloo Courier*, and was reproduced on the University of Northern Iowa website.

Gordon Harrington of Waterloo died of natural causes on December 31, 2015. He was born on April 12, 1925 in Knoxville, and spent his childhood and teen years living in Tennessee, Canada, and Georgia. Serving in the US Navy during World War II, Gordon had a profound shift in his thinking about racism, which became the foundation for the rest of his personal and professional life. Once discharged from the Navy, he earned a bachelor's degree in electrical engineering from the Georgia Institute of Technology. While teaching mathematics there in 1946, he became friends with a young African-American professor at Morehouse University, Atlanta; his awareness of discrimination and racism grew, and he became an anti-racist ally. Gordon was persuaded to study ministry at Yale, and eventually became a minister at the New London, Connecticut, Unitarian Universalist (UU) church. His major professor at Yale then encouraged Gordon to shift from religion to Child Development in the Departments of Education, Psychology, and Child Psychiatry, where he earned a PhD in Child Development. His career path began as a research consultant for the State of Connecticut Board of Regents for five years, then into academia, first in Ohio, then Coe College (Cedar Rapids), and eventually in 1963 to the State College of Iowa (which became UNI) as a professor of research, child development, and statistics in the Department of Psychology for the rest of his career, retiring in the early 1990s. With Gordon's professional focus remaining on race relations, he pondered how racial views and religious views develop, and what the individual differences are in such development. He came to the view that race could not be defined genetically; rather, it was a social phenomenon. This was cutting-edge thinking at the time; and the importance of his research findings was recognized by an article in *Nature* in December 1975. Gordon continued research in areas of intelligence and genetic interactions throughout the rest of his career, publishing many research articles and presenting at national and international conferences. Gordon's volunteer activities included chairing the first Cedar Falls Human Rights Commission, 1974–83; he joined the national and State of Iowa Civil Rights Unions and was Treasurer of the State organization; he was involved in the establishment of the Iowa Civil Liberties Foundation. He remained an active member of his local UU congregation. He was known for his love of chatting with others and telling stories about his life. He was widowed in 2014, and was survived by two of his three sons.

2021 IMS Elections: Meet the candidates

It's time to think about who you would like to represent you on the IMS Council, and vote in the IMS elections. This year, the nominee for President-Elect is Peter Bühlmann. There are 12 candidates standing for the six available places on Council: Genevera I. Allen, Graciela Boente, Amarjit Budhiraja, Radu V. Craiu, Aurore Delaigle, Davar Khoshnevisan, Samuel Kou, Claudio Landim, Sofia Olhede, Dylan Small, Maria Eulalia Vares and Daniela M. Witten. Read about them here or on the IMS website, at <https://imstat.org/elections/candidates/>.

Voting closes June 23, 2021.

President-Elect Nominee

Peter Bühlmann

Professor of Statistics, Seminar for Statistics,
Department of Mathematics, ETH Zürich

<https://stat.ethz.ch/~buhlmann/>



IMS Council Member (ex officio) 2010–2012
IMS Council Member 2014–2017
Member/Chair IMS Fellows Committee 2016/2017
Program Co-Chair IMS Annual Meeting 2018 Vilnius
Associate Editor Statistical Science 2017–current

Brief Statement

I feel deeply honored to be nominated as President-Elect of IMS. If elected, I will devote myself to maintain IMS as the prime society for statistics and probability. This is to be seen in the broad sense, encompassing, among others, interdisciplinary, reproducible, data, information and mathematical sciences. My goals also include the continuation and further development of what has been initiated already, namely: partnership with related disciplines; and supporting the generation of young scientists, something I view as especially important. All members of IMS, over the entire globe and from diverse backgrounds, will be most welcome to contribute shaping the future of IMS.

Education

Diploma (MSc) in mathematics, 1990, ETH Zürich
PhD in statistics, 1993, ETH Zürich (advisor: Hans R. Künsch)

Research Interests

Causal inference
Computational statistics
High-dimensional statistics
Interdisciplinary applications in the bio-medical field

Previous Service to the Profession

Associate Editor *Annals of Statistics* 2006–2009
Co-Editor *Annals of Statistics* 2010–2012

Council Nominees

This year there are 12 candidates,
for six places on IMS Council.

Genevera I. Allen

Associate Professor, Departments of Electrical
and Computer Engineering, Statistics, and
Computer Science, Rice University.
Founder and Faculty Director, Center for
Transforming Data to Knowledge, (D2K Lab)
Rice University.
Neurological Research Institute, Baylor College of Medicine.



<http://genevera.rice.edu/>

Genevera Allen continued**Education**

BA, Statistics, Rice University, 2006

PhD, Statistics, Stanford University, 2010

Research Interests

Statistical machine learning

Graphical models

Modern multivariate analysis

Data integration

Applications in biomedicine and neuroscience

Previous Service to the Profession

Action Editor, *Journal of Machine Learning Research*, 2019–present

Series Editor, *Springer Texts in Statistics*, 2018–present

Associate Editor, *Biometrics*, 2014–2018

Associate Editor, *Electronic Journal of Statistics*, 2013–2016

Student Awards Chair, ASA Section on Statistical Learning and
Data Science, 2017–2020

JSM Poster Chair, 2016

Program Chair, ASA Section on Statistical Learning and Data
Science, 2018

Brief Statement

There has never been more interest and excitement in the fields of probability and statistics. The types of problems we study and questions we pose are critically relevant for making decisions in an increasingly data-centric world. It is an honor to be nominated for the IMS Council. If elected, I would seek to not only maintain the rich intellectual foundations of our discipline, but also embrace the new challenges, questions, and opportunities arising in data science and other interdisciplinary research frontiers. Further, expanding opportunities for early career researchers, women, and under-represented groups is important for maintaining a thriving research community.

Graciela Boente

Professor, Department of Mathematics,
University of Buenos Aires and CONICET,
Argentina

**Education**

1978: Licenciada en Matematica (Mathematics Diploma),
University of Buenos Aires

1983: PhD in Mathematics, University of Buenos Aires

Research Interests

Functional data analysis

Multivariate analysis

Nonparametric and Semiparametric inference

Robust inference

Previous Service to the Profession

Associate Editor of *Computational Statistics and Data Analysis*
(2014–2017)

Associate Editor of *Statistica Sinica* (2002–2005)

Associate Editor of *REVSTAT* (2014–)

Associate Editor of *REVUMA* (2020–)

Member-at-large of the Commission on Development and
Exchanges (CDE) of the International Mathematical Union
(2003–2010)

Brief Statement

It is a great honor to run for election to the Council of the IMS which is one of the most prestigious statistical societies. If elected, I will be glad to serve the statistical community, giving advice to the society and supporting activities that will help young researchers to join the IMS. I will also try to promote the IMS in Latin America, in particular, encouraging virtual meetings that may allow to expand participation to those with less possibilities to travel.

Amarjit Budhiraja

Professor, Department of Statistics and
Operations Research, The University of North
Carolina at Chapel Hill



<https://abudhiraja.web.unc.edu>

Education

Ph.D. Statistics, 1994, The University of North Carolina at Chapel
Hill

S. Statistics (Analysis and Probability), 1990, Indian Statistical
Institute

B.S. Mathematics, 1988, Delhi University, India

Continues on **page 18**

Amarjit Budhiraja continued**Research Interests**

Large Deviations
 Stochastic Control and stochastic Differential Games
 Stochastic Networks
 Stochastic Partial Differential Equations
 Nonlinear Filtering

Previous Service to the Profession

Associate Editor. *Potential Analysis*, Oct 2020 –
 Associate Editor. *Math. Oper. Res.*, Sep 2020 –
 Associate Editor. *SIAM Journal on Control and Optimization*, Jan 2008 –
 Associate Editor. *Applied Math and Optimization*, Dec 2016 –
 Associate Editor. *Ann. App. Prob.*, 2013–2018
 Associate Editor. *Sankhya, Series A*, 2007–2018
 Associate Editor. *Bernoulli*, 2009–2016
 Associate Editor. *Electronic Journal of Probability and Electronic Communications in Probability*, 2007–2012
 Permanent member of the Scientific Committee of the Seminar on Stochastic Processes
 IMS Committee on Special Lectures 2020–2023
 Program Committee, INFORMS Applied Probability Conference, July 3–5, 2019, Brisbane, Australia and July 6–8, 2011, Stockholm, Sweden
 IMS Committee on Travel Awards 2015–2018
 IMS Committee on Nominations 2013–2015
 Program Committee, IMS–Asia Pacific Rim Meeting, 2016 and 2018

Brief Statement

It is my honor to run for election to the IMS council. The areas of Probability and Statistics are becoming increasingly central to many fields of inquiry and the IMS is a natural home to researchers from a broad range of academic areas. If elected, I would strive to make IMS a welcoming and a rewarding venue for researchers from diverse backgrounds, and in particular for early-career researchers and those from under-represented groups. I would also work towards continuing to expand the global footprint of IMS, particularly in Asia, South America and Africa.

Radu U. Craiu

Professor and Chair, Department of Statistical Sciences, University of Toronto

<https://utstat.toronto.edu/craiu/>

**Education**

BSc (1995, University of Bucharest)
 MSc in Mathematics (1996, University of Bucharest)
 PhD (2001, University of Chicago)

Research Interests

Bayesian inference
 Copula Models
 Markov chain Monte Carlo algorithms
 Model Selection
 Statistical Genetics, Ecology and Astrostatistics

Previous Service to the Profession

Contributing Editor for *IMS Bulletin* (2020–present)
 AE for *Harvard Data Science Review* (2019–present)
 AE for *Journal of Computational and Graphical Statistics* (2006–present)
 AE for *STAT–ISI's Journal for the Rapid Dissemination of Statistics Research* (2012–present)
 Past AE for *Statistica Sinica* (2005–2011)
 Past guest AE for *Technometrics* (2014) and *Statistics and Its Interface* (2014)
 Member of NSERC's evaluation panel in Mathematics and Statistics (2016–2018)

Brief Statement

It is an honour to be considered for membership on the IMS council. As the most important organising body of the international community of statisticians, IMS can use its prestige to spearhead initiatives that will increase the visibility and impact of Statistics. Equally important, the long history of IMS positions it perfectly to help our profession preserve its core values and to inspire more active involvement with other communities working within Data Science. If elected, I will work to preserve IMS as a unifying and visionary organisation at a time when our community is pulled in many competing directions.

Aurore Delaigle

Professor, School of Mathematics and Statistics, University of Melbourne

<https://researchers.ms.unimelb.edu.au/~aurored@unimelb/>



Education

Bachelor in Mathematics, Université catholique de Louvain, Belgium, 1997
 Master in Statistics, Université catholique de Louvain, Belgium, 1999
 PhD in Statistics, Université catholique de Louvain, Belgium, 2003

Research Interests

Nonparametric statistics
 Measurement errors, deconvolution, and imperfectly observed data
 Functional data

Previous Service to the Profession

Executive Secretary and member of the Executive Committee of the IMS (2011–2017)
 Co-Editor in chief of the *Journals of the Royal Statistical Society, Series B* (2020–2022)
 Associate editor for *Annals of Statistics* (2012–2018), *Australian and New Zealand Journal of Statistics* (2012–2018), *Econometrics and Statistics Journal, Part B Statistics* (2016–2018), *Journal of the American Statistical Association* (2008–2019), *Journal of Computational and Graphical Statistics* (2009–2019), *Journal of Nonparametric Statistics* (2009–2012), *Journal of the Korean Statistical Society* (2008–2012), *Journal of the Royal Statistical Society, Series B* (2010–2019), *Statistica Sinica* (2008–2018)
 2022 Institute of Mathematical Statistics (IMS) Asia Pacific Rim conference local committee chair and organiser (with Howard Bondell)
 Member of sectional committee 14 (interdisciplinary) to elect fellows of the Australian Academy of Science (2020–2023)
 Section on Nonparametric Statistics Council of Sections Representative (elected) for the American Statistical Association (2019–2021)
 Member of the Network of Advisors for the publications of the Royal Statistical Society, UK (2020–2022)
 Member of the IMS committee to select administrative officers (2020–2023)
 Chair of committee for Peter Hall Prize, IMS (2020–2023)

Member of the publications committee of the Bernoulli Society (2016–2020)
 Member of the Gavin Brown Prize committee of the Australian Mathematical Society (2020)
 Executive Secretary of the International Society for Nonparametric Statistics (2013–2018)
 2017 Associated chair of the Joint Statistical Meetings Chair (2016) and member (2013) of the American Statistical Association Nonparametric Statistics Section Student Paper Award committee
 IMS representative to the American Statistical Association Committee on Meetings (2011–2017)

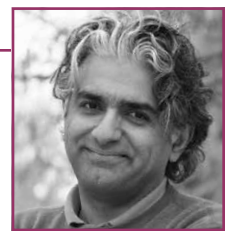
Brief Statement

IMS has and will continue to play a central role in the promotion and dissemination of high quality probability and statistics. My very enjoyable experience as executive secretary of the IMS (from 2011 to 2016) has taught me a lot about the various challenges it faces. During my term as executive secretary, I contributed to discussions about modernising various aspects of the IMS, such as its publications, membership, fellowship, organisation of IMS meetings, and gender equity. I would love to contribute again to the continuation of its outstanding support to the scientific community.

Davar Khoshnevisan

Professor and Chair, Department of Mathematics, The University of Utah

<http://www.math.utah.edu/~davar/>



Education

B.Sc./M.Sc. in Mathematical Sciences (1984) The Johns Hopkins University
 Ph.D. in Statistics (1989) University of California, Berkeley

Research Interests

Probability
 Stochastic Analysis
 Stochastic Partial Differential Equations
 Applications of stochastic analysis to physics and engineering

Continues on page 20

Davar Khoshnevisan continued**Previous Service to the Profession**

- (2020–2024) Probability & Statistics Editor, *Memoirs of the American Mathematical Society*
- (2020–2024) Probability & Statistics Editor, *Transactions of the American Mathematical Society*
- (2013–present) Associate Editor, *Journal of Fractal Geometry*
- (2007–present) Associate Editor, *Journal of Theoretical Probability*
- (2013–present) Member of the advisory board for *Lecture Notes in Mathematics, Springer-Berlin*
- (2012–present) Series Editor for *Probability and Its Applications, Springer-Berlin*
- (2012–present) Series Editor for *Progress in Probability, Springer-Basel*
- (2011–2017) Associate Editor, *The Annals of Probability*
- (2009–2012) Associate Editor, *Stochastic Processes & Their Applications*
- (1999–2002) Managing Editor, *Electronic Journal of Probability and Electronic Communications in Probability*
- (2020–present) Organizer of the biweekly online seminar, Stochastic Analysis Under Covid Years 2020 and 2021
- (2017–2020) Member of the Committee on Fellows, IMS
- (2017–2020) Member of the Joint Special Chairs Committee, IMS/Bernoulli Society
- (2017–2021) Foreign member of the Scientific Advisory Committee of Summer School in Stochastic Analysis, CRM-Barcelona
- (2014–2015) Chair of the Committee on Electronic Issues, IMS
- (2011–2014) Member of the Committee on Electronic Issues, IMS
- (2009–2011) Council member, IMS
- (2009–2011) Member of the Finance Committee, IMS
- (2003–2004) Chair of the Committee for selection of Special Invited Lectures, IMS
- (2001–2003) Member of the Committee for selection of Special Invited Lectures, IMS

Brief Statement

It is a privilege to be a member of the IMS, and an honor to be nominated for election to the IMS Council. The IMS plays a fundamental role in identifying and supporting high-quality research and a wide array of training and development efforts in our discipline. I believe it is vitally important to continue to offer publications and conference venues at the highest levels and at low cost, and to continue to also find new ways of doing that in the modern times. Despite the many difficulties and challenges that the current global pandemic has presented us with, it also has suggested a number of possibilities for novel dissemination of knowledge and

new ways of finding and honing potential talent in statistics and probability. There indeed is a lot to learn from our present situation. I would be honored to have a chance to explore these topics as a member of the IMS council.

Samuel Kou

Professor of Statistics, Department of Statistics, Harvard University

<http://www.people.fas.harvard.edu/~skou/>

**Education**

Ph.D. in statistics, received from Stanford University in 2001

Research Interests

Stochastic inference in single molecule biophysics, chemistry and biology

Bayesian inference of stochastic models

Big data and big data analytics

Nonparametric methods, model selection and empirical Bayes

Monte Carlo methods

Economic and financial modeling

Previous Service to the Profession

2015. Committee on Nominations, Institute of Mathematical Statistics
- 2008 to 2011. Committee on Publications (served as committee chair: 2009–2010), Institute of Mathematical Statistics
2018. COPSS Presidents' Award Committee
- 2017, 2016, 2014, 2013, 2012, and 2009. US National Science Foundation grant review panel
- 2010 to 2012. Member, Board of Directors, International Chinese Statistical Association
- 2019, 2018, 2015, and 2010. Guest Editor, *Proceedings of the National Academy of Sciences of the USA*
- 2017 to now. Associate Editor, *Journal of the American Statistical Association, Theory and Methods*
- 2013 to 2019. Associate Editor, *Annals of Statistics*
- 2010 to 2012. Editor, *Annals of Applied Statistics*
- 2013 to 2017. Editor, *STAT*
- 2011 to 2013. Associate Editor, *Statistical Science*
- 2010 to 2014. Associate Editor, *Bernoulli*
- 2009 to 2012. Associate Editor, *Journal of the American Statistical Association*

*Association, Applications and Case Studies*2008 to 2013. Editor, *Chance Magazine*2007 to 2009, and 2012 to 2015. Associate Editor, *Annals of Applied Statistics*2005 to 2011, and 2014 to 2017. Associate Editor, *Statistica Sinica*2006 to 2009. Associate Editor, *Journal of Multivariate Analysis***Brief Statement**

It is my great honor to be nominated for membership in the IMS Council. The IMS has an extraordinary tradition of bringing probabilists and statisticians together, with a united focus on scientific excellence, evidenced by its outstanding reputation on publications, meetings, promoting collaboration, and mentoring young researchers. The inclusive culture of the IMS is particularly well suited for shaping the discipline and fostering cross-fertilization in the era of data science, where a concerted effort (from statisticians and probabilists) is needed for important scientific applications as well as deep understanding of new technical advances. It will be my privilege to contribute to this effort.

Claudio Landim

Researcher, IMPA and CNRS

<http://w3.impa.br/~landim/>**Education**

PhD at Paris 7 in 1990

Research Interests

Probability Theory
Statistical Mechanics
Large deviations
Hydrodynamical limit
Metastability

Previous Service to the Profession

Vice-president of the Brazilian Mathematical Society (1999–2000)

Member of the Committee for Conferences on Stochastic Processes of the Bernoulli Society (2003–2006 and 2020–2023)

President of the Latin-American Society of Probability and Mathematical Statistics–SLAPEM (2009–2012)

Coordinator of the Brazilian Mathematical Olympiads for Public Schools (OBMEP) (2011–present)

Deputy Director, IMPA (2008–present)

Director CNRS UMI 2994 (2016–present)

Founder of the Brazilian School of Probability (1997)

Founder of the *Latin American Journal of Probability and Mathematical Statistics (ALEA)* (2006)

Founder of the Brazilian Probability Seminar (2021)

Associate Editor of *RMU*, *ALEA*, *Annales Toulouse*, *SPA*, *JSP*, *EJP*, *ECP*, *PTRF*, *BBMS***Brief Statement**

In recent years, the importance of probability and statistics for the advancement of sciences has been recognized by both the academic community and society. The IMS has a central role in the development and promotion of these areas of knowledge. It takes the form of publishing high quality journals sold at affordable prices, organizing international events, encouraging young scientists. In this sense, the IMS must continue to create sustainable economic models for the promotion of science that can be reproduced by other areas of knowledge and in other regions. Furthermore, the IMS should stimulate the progress of probability and statistics in less developed countries. This mission requires the voluntary collaboration of the scientific community.

Sofia Olhede

Chair of Statistical Data Science, Institute of Mathematics, École polytechnique fédérale de Lausanne, Switzerland

<https://people.epfl.ch/sofia.olhede/?lang=en>**Education**

MSci in Mathematics 2000, Imperial College London

PhD in Mathematics 2003, Imperial College London

Research Interests

Network data analysis
Network asymptotics
Data science
Stochastic processes
Time series, point processes and random fields

Previous Service to the Profession

Member of IEEE Spectrum Editorial Advisory Board since May 2019

Member of the Methods Advisory Group (MAG) of the UK Department for Work & Pensions since February 2019

Sofia Olhede continued

Commissioner on the Law Society of England and Wales Public Policy Technology and Law Commission—Algorithms in the Justice System. Commissioner with Law Society Vice President Christina Blacklaws and Professor Sylvie Delacroix 2018–2019
 Royal Society and British Academy Data Governance Working Group July 2016–June 2017
 Royal Society Machine Learning Working Group Nov 2015–May 2017
 Member of the UK Office of National Statistics Data Science Campus Advisory Board since July 2018
 Chair of the Alan Turing Institute Science Committee and Interim Program Committee May 2015–Aug. 2016
 Associate Editor for the *IEEE Trans. Signal Proc* October 2009–October 2013
 Member of the Institute of Mathematical Statistics nominations committee 2008–2009 appointing its new president
 Associate Editor for the *J. Royal Statistical Society Series B* August 2007–August 2011
 Member of the Research Section of the Royal Statistical Society July 2005–Dec. 2009

Brief Statement

Statistics and probability have never been more relevant as disciplines in terms of informing policy and data-driven decision-making; in a sense our current world does require experts. The areas that feed into the disciplines via understanding of high dimensional behaviour seem to be ever increasing. As an IMS council member, my experience of facilitating interdisciplinary activities, as well as my experience from providing advice to various public and governmental bodies, would be used to encourage ever greater interaction between disciplines in the Mathematical Sciences and beyond.

Dylan Small

Class of 1965 Wharton Professor of Statistics and Department Chair, Department of Statistics, The Wharton School, University of Pennsylvania



<http://www-stat.wharton.upenn.edu/~dsmall/>

Education

AB, Mathematics, Harvard University, 1997
 PhD, Statistics, Stanford University, 2002

Research Interests

Causal inference
 Applications of statistics to public health and public policy

Previous Service to the Profession

Associate Editorships: *Annals of Statistics* (2015–present), *Observational Studies* (editor, 2014–2019; associate editor, 2020–present), *Journal of Causal Inference* (2011–present), *The American Statistician* (2008–present), *Statistical Science* (2018–2020), *Annals of Applied Statistics* (2019–2020), *Journal of the American Statistical Association* (2008–2012, 2017–2019), *Journal of the Royal Statistical Society Series B* (2011–2016), *Journal of Educational and Behavioral Statistics* (2003–2019), *Journal of Quantitative Analysis in Sports* (2011–2014), *Biometrics* (2008–2010)
 Statistics in Epidemiology Section of the American Statistical Association: Publications Officer, 2007–2009; Program Chair, 2012; Chair, 2018
 Statistics in Sports Section of the American Statistical Association: Secretary/Treasurer, 2007–2009; Chair, 2011

Brief Statement

I am honored to stand for election to the IMS council. I would like to listen and work with IMS members to find ways to represent members' interests. Particular interests of mine for the IMS include the following: maintaining the high quality of the IMS journals, supporting early career researchers, encouraging under-represented groups to enter our field and supporting their careers, supporting researchers working in isolated environments and keeping IMS members feeling part of a community.

Maria Eulalia Vares

Professor, Statistics Department / Institute of Mathematics, Federal University of Rio de Janeiro



<http://www.im.ufrj.br/eulalia/>

Education

PhD in Statistics—UC Berkeley—1980
 MSc in Mathematics—IMPA, Rio de Janeiro, 1977
 BSc in Mathematics—UFRGS, Porto Alegre, 1975

Research Interests

Probability and Statistical Physics:
Interacting particle systems
Percolation
Metastability

Previous Service to the Profession

Editor, *Stochastic Processes and their Applications* (2006–2009)
Editor, *Annals of Probability* (2015–2017)
Area Editor, *Brazilian J. of Probability and Statistics* (2013–2014)
Editor, *Ensaios Matemáticos–Braz Math. Society* (2004–current)
AE for *Annals of Probability* (1997–2002)
AE for *Stochastic Processes and their Applications* (2002–2006, 2009–2015)
AE for *BJPS* (2004–2012, 2015–2018)
AE for *Publicaciones Matemáticas del Uruguay* (2003–2009)
Chair of the Publications Committee of the Bernoulli Society (2012–2014)
Member of the SLAPEM Committee (2019–)
For a few years in the past I served at the publications committee of the Bernoulli Society, member of the Bern Society Council, member of the IMS Council, member of the SLAPEM committee, one of the initiators and several times organizer of the Brazilian School of Probability, and other events for the probability community in Brazil and in Latin America.

Brief Statement

It is an honor to participate in the election for the IMS Council. The IMS is extremely important in promoting the development of probability and statistics in all regions of the world. For this, its role as a publisher has proven essential over the years, and we should make all efforts to face new challenges, keeping the high level, facilitating access and attracting young statisticians and probabilists to membership. I consider extremely important to encourage stronger participation of researchers from developing countries.

Daniela M. Witten

Professor and Dorothy Gilford Endowed Chair in Mathematical Statistics, Department of Statistics and Department of Biostatistics, University of Washington



<https://www.danielawitten.com/>

Education

B.S. in Mathematics and Biological Sciences, 2005, Stanford University
M.S. in Statistics, 2006, Stanford University
Ph.D. in Statistics, 2010, Stanford University

Research Interests

Statistical machine learning
High-dimensional statistics
Applications to genomics and neuroscience

Previous Service to the Profession

Associate Editor: *Journal of Computational and Graphical Statistics*, 2011–2015; *Biometrika*, 2012–present; *Journal of the American Statistical Association, Theory & Methods*, 2014–2017; *Journal of Machine Learning Research*, 2018–present
Award Committees: COPSS Distinguished Achievement Award and Lecture Committee, 2019–2022; Committee chair in 2021 Spiegelman Award Committee, 2020–present
Editor Search Committees: Committee to select founding co-editors of *IMS Data Science Journal*, 2019–2020; *JASA Theory & Methods* Co-Editor Nominating Committee, 2020; *AOAS* Editor Search Committee, 2020–2021
Institute for Pure and Applied Mathematics (IPAM) Scientific Advisory Board, 2019–present
ASA Ad Hoc Data Science Advisory Committee 2019–2020
Program/Steering committee member for 10+ conferences (incl. JSM as IMS Contributed Papers Chair); 2012–present

Brief Statement

As interest in data science increases, there is growing pressure on the fields of mathematical statistics and probability to prove their value in a data-driven world. There is also a rare opportunity to showcase our contributions to a large scientific audience. IMS is uniquely positioned to tackle this challenge and seize this opportunity. I will continue IMS's efforts to engage with researchers from other fields, and to welcome a big tent of researchers across all areas of statistics and probability, broadly defined. Moreover, I'm committed to supporting early career researchers, and to promoting diversity.

<https://imstat.org/elections/>
Voting closes June 23, 2021

IMS meetings around the world

Joint Statistical Meetings: 2021–2026

JSM 2021 UPDATED

August 7–12, 2021. Seattle, USA (and online: hybrid format).

w <https://www2.amstat.org/meetings/jsm/2021/>

The theme of the 2021 JSM is “Statistics, Data, and the Stories They Tell.” Registration and housing open May 3, 2021. The early registration deadline is May 31. **Submit your Contributed Abstract for JSM 2021 before April 14, 2021.** With the pandemic continuing to evolve, JSM 2021 will likely look a little different. Organizers are making plans for hybrid participation and have rethought parts of the program. All contributed presentations will be in two parts: a live, 3–4-minute overview of your presentation, plus a pre-recorded, 15-minute presentation for on-demand viewing.



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

IMS sponsored meetings: JSM dates for 2022–2026

2022 Joint Statistical Meetings	IMS Annual Meeting @ JSM 2023	JSM 2024
August 6–11, 2022	August 5–10, 2023	August 3–8, 2024
Washington DC	Toronto, Canada	Portland, Oregon, USA

IMS Annual Meeting @ JSM 2025	JSM 2026
August 2–7, 2025	August 1–6, 2026
Nashville, TN, USA	Boston, MA, USA

10th Bernoulli–IMS World Congress 2021

NOW ONLINE July 19–23, 2021

w <https://www.wc2020.org/mail/m-e02.html>

The congress, hosted by Seoul National University, is now in virtual format. This Congress will have 14 (plenary) named lectures, one public lecture, 40 invited sessions featuring 120 speakers, contributed talks, and poster sessions. Prior to the Congress, a two-day **Young Researchers Meeting** will also be held virtually on July 17–18, 2021.

Seminar on Stochastic Processes (SSP) 2022

March 17–19, 2022

Lehigh University, Bethlehem, PA, USA

w <https://wordpress.lehigh.edu/ssp2021/>

The SSP at Lehigh University is postponed to March 17–19, 2022 (speakers: Alexei Borodin, Jennifer Chayes, Tadahisa Funaki, Sarah Penington, Makiko Sasada), with the SSP Tutorial Lecture by Greg Lawler planned for March 18, 2022. Details forthcoming in 2021.

2021 Southeastern Probability Conference

Virtual conference, held in honor of Elizabeth Meckes

May 17–18, 2021, hosted by Duke University Math Department

w <https://services.math.duke.edu/~rtd/SEPC2021/SEPC2021.html>

Speakers: Sourav Chatterjee, Matt Kahle, Kay Kirkpatrick, Jon Keating, Mark Meckes, Tai Melcher, Sayan Mukherjee and Kavita Ramanan. Talks given over Zoom. Registration coming soon.

2022 IMS Annual Meeting

June 27–30, 2022, London, UK

w TBA

Mark your calendars for the 2022 IMS Annual Meeting. Held in London immediately before COLT, with extra workshop planned [see announcement below]. Program and Local Chair: Qiwei Yao.

2022 IMS–COLT Joint Workshop

July 1, 2022

London, UK

w <https://bguedj.github.io/colt-ims-2022.github.io/>

The 2022 IMS Annual Meeting [see announcement above] will be immediately followed by the first IMS–COLT joint workshop, a one-day meeting in a hybrid format (on-site in central London, and online), linking the IMS and COLT communities of researchers. (COLT is the annual Conference on Learning Theory, and will take place in 2022 immediately after this IMS–COLT workshop day.) Committee: Benjamin Guedj (chair), Peter Grünwald, Susan Murphy.

At a glance:

*forthcoming
IMS Annual
Meeting and
JSM dates*

2021

IMS Annual Meeting @ JSM: Seattle, August 7–12, 2021

2022

IMS Annual Meeting: London, UK, June 27–30, 2022

JSM: Washington DC, August 6–11, 2022

2023

IMS Annual Meeting @ JSM: Toronto, August 5–10, 2023

2024

IMS Annual Meeting/ 11th World Congress: Bochum, Germany, August 12–16, 2024

JSM: Portland, OR, August 3–8, 2024

2025

IMS Annual Meeting @ JSM: Nashville, TN, USA, August 2–7, 2025

More IMS meetings around the world

These IMS sponsored or co-sponsored meetings are rearranged. Please check for updates.

AWAITING NEW DATES:

7th Bayes, Fiducial and Frequentist Statistics Conference (BFF7) <http://www.fields.utoronto.ca/activities/20-21/BFF7>

8th Workshop on Biostatistics and Bioinformatics

<https://math.gsu.edu/yichuan/2020Workshop/>

REARRANGED/UPDATED AGAIN:

Frontier Probability Days — NOW IN DECEMBER 2021, Las Vegas, Nevada

w <http://lechen.faculty.unlv.edu/FPD20/>
The conference has been rescheduled again, from May 16–18, to the end of 2021. The exact dates will be determined soon. Registration will be open until Oct 16, 2021.

Mathematical Statistics and Learning June 1–4, 2021, Barcelona, Spain.

w <http://www.msl2020.org/>

WNAR/IMS/KISS/JR Annual Meeting NOW ONLINE, June 13–16, 2021

<http://www.wnar.org/event-3977784>

10th Bernoulli–IMS World Congress NOW ONLINE

July 19–23, 2021, Seoul, South Korea

w <https://www.wc2020.org/>

The congress is now in virtual format.

Statistics in the Big Data Era NOW IN 2022 June 1–3, 2022, UC Berkeley, CA, USA

The conference has been rescheduled again, from June 2021 to June 1–3, 2022

w <https://simons.berkeley.edu/workshops/statistics-big-data-era>

One World ABC Seminar: Ongoing and online

w <https://warwick.ac.uk/fac/sci/statistics/news/upcoming-seminars/abcworldseminar>
Inspired by the “One World Probability Seminar”, in April 2020 we decided to run the One World Approximate Bayesian Computation (ABC) Seminar, a fortnightly series of seminars that will take place via Zoom on Thursdays at 11.30am [UK time]. The idea is to gather members and disseminate results and innovation during these weeks and months under lockdown. Register to receive the webinar link via email.

Forthcoming speakers:

April 29, 2021, Jakob Macke

May 27, 2021, Veronika Rockova

The organizers are welcoming proposals for future talks. This webinar is part of the larger One World seminar initiative, which gathers seminars in applied mathematics and data sciences. [See below for One World Probability Seminar]

One World Probability Seminar (OWPS): Ongoing and online

w <https://www.owprobability.org/>

The short-term goal of the One World Probability Seminar is to provide access to a seminar for as many researchers as possible. For the indefinite future, the seminar is intended to foster ideas among our truly global research community and to help reduce our impact on climate change. Initially, the seminar will have an experimental character. We will need to understand how to work with online tools and learn how to deal with the vulnerabilities and bottlenecks of online traffic. Please join us in the long journey ahead!



IMS sponsored meeting

2022 ENAR meeting:

March 27–30, 2022, Houston, TX, USA

w <https://enar.org/meetings/future.cfm>

2023 ENAR meeting:

March 22–25, 2023, Nashville, TN, USA

w <https://enar.org/meetings/future.cfm>

IMS annual meeting

Bernoulli–IMS 11th

World Congress in

Probability and

Statistics and 2024

IMS Annual Meeting

August 12–16, 2024,

Ruhr-University

Bochum, Germany

w TBC

IMS Asia Pacific Rim Meeting 2022

January 4–7, 2022, Melbourne, Australia

w <http://ims-aprm2021.com/>

The sixth IMS-APRM was scheduled to take place in Melbourne in January 2021; it is now postponed until January 2022. IMS-APRM will provide an excellent forum for scientific communications and collaborations for the researchers in Asia and the Pacific Rim, and promote communications and collaborations between the researchers in this area and those from other parts of the world. The program covers a wide range of topics in statistics and probability. Invited Session Proposals submitted in 2020 are being kept on file.

ABC in Svalbard (VIRTUAL)

April 12–13, 2021, Svalbard, Norway

w <https://sites.google.com/view/abcinsvalbard/home>

Registration is open and limited to 100 participants so book soon! ABC in Svalbard aims to attract researchers at the forefront of research on approximate Bayesian computing methods, and promote original research in that field among various disciplines.



Employment Opportunities around the world

China: Beijing

Chinese Academy of Sciences

Academy of Mathematics and Systems Science, Chinese Academy of Sciences Tenured and Tenure-track Positions
http://jobs.imstat.org/c/job.cfm?site_id=1847&jb=55646957

Denmark: Aarhus

Department of Mathematics, Aarhus University

Professor position in Stochastics
http://jobs.imstat.org/c/job.cfm?site_id=1847&jb=56167973

United Kingdom: Liverpool

University of Liverpool

Professor and Head of Department of Mathematical Sciences
http://jobs.imstat.org/c/job.cfm?site_id=1847&jb=56016851

United States: Auburn, AL

University of Auburn, College of Agriculture

Director, Statistics Teaching and Consulting
http://jobs.imstat.org/c/job.cfm?site_id=1847&jb=56168956

United States: Irvine, CA

The University of California, Irvine Department of Epidemiology and Biostatistics

Professor or Associate Professor of Biostatistics, Department of Epidemiology and Biostatistics
 Biostatistics Shared Resource Director, Chao Family Comprehensive Cancer Center
http://jobs.imstat.org/c/job.cfm?site_id=1847&jb=56005583

United States: La Jolla, CA

Institute for Defense Analyses - Center for Communications Research, La Jolla

Adjunct Research Staff Member (SCAMP 2022)
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United States: La Jolla, CA

University of California San Diego

Assistant Professor, Halicioglu Data Science Institute
http://jobs.imstat.org/c/job.cfm?site_id=1847&jb=56132570

United States: San Leandro, Berkeley, CA

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Lecturer
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United States: Boston, MA

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Junior Faculty Position in Biostatistics
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United States: College Park, MD

University of Maryland

Clinical Assistant Professor in Biostatistics
http://jobs.imstat.org/c/job.cfm?site_id=1847&jb=55884144

United States: Saint Louis, MO

Washington University in Saint Louis

Professor of Statistics and Data Science
http://jobs.imstat.org/c/job.cfm?site_id=1847&jb=55806832

United States: Springfield, MO

Missouri State University/ McQueary College of Health and Human Services

Assistant Professor, Tenure Track, MCHHS RStats Institute
http://jobs.imstat.org/c/job.cfm?site_id=1847&jb=55935344

United States: Wilmington, NC

University of North Carolina Wilmington

Lecturer - Mathematics and Statistics
http://jobs.imstat.org/c/job.cfm?site_id=1847&jb=56211151

United States: Branchburg, NJ

Raritan Valley Community College

Instructor-Mathematics, Tenure-Track
http://jobs.imstat.org/c/job.cfm?site_id=1847&jb=56194056

United States: Philadelphia, PA**University of Pennsylvania, Wharton Department of Statistics**

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http://jobs.imstat.org/c/job.cfm?site_id=1847&jb=55571133**United States: Providence, RI****Rhode Island School of Design**

Senior Reporting and Research Analyst

http://jobs.imstat.org/c/job.cfm?site_id=1847&jb=56133331**United States: Alexandria, VA****National Science Foundation**

Deputy Division Director

http://jobs.imstat.org/c/job.cfm?site_id=1847&jb=55884538**United States: Alexandria, VA****Institute for Defense Analyses**

Research Analyst - Economist, Applied Mathematician, or Statistician

http://jobs.imstat.org/c/job.cfm?site_id=1847&jb=56016747**United States: Madison, WI****University of Wisconsin- Madison**

Director for the American Family Insurance Data Science Institute

http://jobs.imstat.org/c/job.cfm?site_id=1847&jb=56209374

Call for nominations for ICIAM Prizes 2023

The ICIAM Prize Committee for 2023 calls for nominations for the six ICIAM Prizes to be awarded in 2023: the Collatz Prize, the Lagrange Prize, the Maxwell Prize, the Pioneer Prize, the Su Buchin Prize, and the Industry Prize. Each ICIAM Prize has its own special character, but each one is truly international in character.

Read about the prizes at <http://www.iciam.org/iciam-prizes>.

Nominations are therefore welcomed from every part of the world. A nomination should take into account the specifications for a particular prize, and should contain the following information:

- Full name and address of person nominated
- Web home page if any.
- Name of particular ICIAM Prize.
- Justification for nomination (cite nominator's reason for considering candidate to be deserving, including explanations of the scientific and practical influence of the candidate's work and publications).
- Proposed citation (concise statement about the outstanding contribution in fewer than 250 words).
- CV of the nominee.
- 2–3 letters of support from experts in the field and/or 2–3 names of experts to be consulted by the Prize Committee.
- Name and contact details of the proposer.

Nominations should be made electronically through <https://iciamprizes.org/>. The deadline for nominations is September 1st, 2021.

Please contact Ya-xiang Yuan, ICIAM President (email president@iciam.org) if you have any question regarding the nomination procedure.

ICIAM, the International Council for Industrial and Applied Mathematics, is the world organization for applied and industrial mathematics. It is a "society of societies," with members from all around the world, based in more than 30 countries. The IMS is an associate member (we have other interests, but significant activity in applied and/or industrial mathematics). Read more at www.iciam.org

The next ICIAM Congress, ICIAM 2023, will take place at Waseda University in Tokyo, Japan, August 20–25, 2023. Organizers say, "We have begun organizing ICIAM 2023. Despite the recent surge of Covid-19 cases in Japan, organizing committee members are working with high spirits. The Congress website will soon be opened, where you will find more details."



International Calendar of Statistical Events



IMS meetings are highlighted in maroon with the  logo, and new or updated entries have the  or  symbol.




Please submit your meeting details and any corrections to Elyse Gustafson: erg@imstat.org

At the time of writing, some meetings are known to be  or canceled. Where new dates are known, they are included here. Some meetings, marked , are offering a virtual format. Please check meeting websites for updates.

Online and Ongoing





  **COPSS–NISS COVID-19 Data Science Webinar series**  <https://www.niss.org/copss-niss-covid-19-data-science-webinar-series>


  **One World ABC Seminar**  <https://warwick.ac.uk/fac/sci/statistics/news/upcoming-seminars/abcworldseminar>


  **One World Probability Seminar**  <https://www.owprobability.org/one-world-probability-seminar>

 **Video series: *The Philosophy of Data Science***  <https://www.podofasclepius.com/philosophy-of-data-science>




April 2021





   **April 12–13: NOW ONLINE [also mirror meeting in Grenoble]. ABC in Svalbard**  <https://sites.google.com/view/abcinsvalbard/home>


April 22–23: Birmingham, UK. 3rd IMA and OR Society Conference on Mathematics of Operational Research  <https://ima.org.uk/14347/14347/>

April 25–27: Gainesville, FL, USA. Conference on Applied Statistics in Agriculture and Natural Resources  <https://conference.ifas.ufl.edu/applied-stats/>

May 2021

  **May 16–18: Las Vegas, USA. Frontier Probability Days** now to be held in December 2021  <http://lechen.faculty.unlv.edu/FPD20/>




   **May 17–18: Virtual format. Southeastern Probability Conference** held in honor of Elizabeth Meckes  <https://services.math.duke.edu/~rtd/SEPC2021/SEPC2021.html>


May 20–23: Chicago, USA. IISA 2021 Summer Conference  <https://www.intindstat.org/summerConference2021/>


June 2021

  **June 13–16: NOW ONLINE. WNAR/IMS/KISS/JR Meeting**  <https://www.wnar.org/page-18098>

 **June 1–4: Barcelona, Spain. Mathematical Statistics and Learning**  <https://www.msl2020.org>

  **June 2–4: Berkeley, CA, USA. Statistics in the Big Data Era** now to be held in June 2022  <https://simons.berkeley.edu/workshops/statistics-big-data-era>

June 14–17: New Orleans, USA. Sixth International Conference on Establishment Statistics (ICES VI)  <https://ww2.amstat.org/meetings/ices/2021/index.cfm>

June 14–18: Paphos, Cyprus. International Symposium on Nonparametric Statistics 2020  <http://cyprusconferences.org/isnps2021/>

Have  you spotted
a meeting that's missing or
listed incorrectly? *Please tell us!*
Email bulletin@imstat.org.

June 20–26: Portoroz, Slovenia. 8th European Congress of Mathematics **w** <http://www.8ecm.si/>

June 28–July 2: Kunming, China. ISBA 2021: World Meeting of the International Society for Bayesian Analysis
w <https://bayesian.org/isba2020-home/>

June 28–July 2: Edinburgh, UK. Extreme Value Analysis
w <https://www.maths.ed.ac.uk/school-of-mathematics/eva-2021>

June 28–July 2: Nový Smokovec, Slovakia. LinStat 2021 **w** <https://linstat2020.science.upjs.sk/>


June 29–July 1: Nottingham, UK. MIMAR (11th Modelling in Industrial Maintenance and Reliability) **w** <https://ima.org.uk/12183/11th-ima-international-conference-on-modelling-in-industrial-maintenance-and-reliability-mimar/>

July 2021

ONLINE July 11–16: NOW ONLINE. 63rd ISI World Statistics Congress 2021 **w** <http://www.isi2021.org/>

July 5–9: Gold Coast, QLD, Australia. 2020 Australian and New Zealand Statistical Conference **w** <https://anzsc2020.com.au>

July 15–18: Montreal, Canada. Statistics 2021 Canada
w <https://www.concordia.ca/artsci/events/statistics-2021.html>

ONLINE  July 19–23 (postponed from 2020): NOW ONLINE. Bernoulli–IMS World Congress
w <https://www.wc2020.org/>

August 2021

August 5–7: Prague, Czech Republic. 3rd International Conference on Statistics: Theory and Applications (ICSTA'21)
w <https://2021.icsta.net/>

 August 7–12: Seattle, WA, USA (and online: hybrid format). IMS Annual Meeting at JSM 2021 **w** <https://www2.amstat.org/meetings/jsm/2021/>

Meeting organizers: to get a FREE LISTING

in this calendar, please submit the details (as early as possible) at
<https://www.imstat.org/ims-meeting-form/>

Or you can email the details to Elyse Gustafson at erg@imstat.org
We'll list them here in the Bulletin, and on the IMS website too, at imstat.org/meetings-calendar/

September 2021

NEW September 6–9: Manchester, UK. RSS 2021 International Conference **w** <https://rss.org.uk/training-events/conference2021/>

September 8–9: Cambridge, UK. Induction Course for New Lecturers in the Mathematical Sciences **w** <https://ima.org.uk/13572/induction-course-for-new-lecturers-in-the-mathematical-sciences-2021/>

September 19–22: Ribno (Bled), Slovenia. Applied Statistics 2020 (AS2020) **w** <http://conferences.nib.si/AS2020>


December 2021

 Dates TBC: Las Vegas, USA. Frontier Probability Days (rearranged from May 2021)
w <http://lechen.faculty.unlv.edu/FPD20/>

January 2022

 January 4–7 (postponed from January 2021): Melbourne, Australia. IMS Asia Pacific Rim Meeting (IMS-APRM2021)
w <http://ims-aprm2021.com/>

March 2022

 March 17–19 (postponed from March 2021): Bethlehem, PA, USA. Seminar on Stochastic Processes (SSP)
w <https://wordpress.lehigh.edu/ssp2021/>

International Calendar *continued*


March 2022 continued

 March 27–30: Houston, TX, USA. **ENAR Spring Meeting**
w <http://www.enar.org/meetings/future.cfm>

May 2022

May 12–18: Erice, Italy. 7th Workshop on Stochastic Methods in Game Theory w <https://sites.google.com/view/erice-smgt2020/the-workshop>

June 2022

 June 1–3: Berkeley, CA, USA (rearranged from June 2021). **Statistics in the Big Data Era, and Peter Bickel's 80th birthday**
w <https://simons.berkeley.edu/workshops/statistics-big-data-era>

 June 27–30: London, UK. **IMS Annual Meeting** w TBC

June 27–July 1: Darwin, Australia. **Joint Southern Statistical Meetings 2022 (JSSM2022)** w <https://statsoc.org.au/event-3529236>


July 2022

 July 1: London, UK. **IMS–COLT one-day workshop** (between IMS meeting and COLT meeting, details to be announced)
w <https://bguedj.github.io/colt-ims-2022.github.io/>

July 10–15: Riga, Latvia. **XXXI International Biometric Conference (IBC2022)** w www.biometricsociety.org/meetings/conferences

July 18–22: Moscow, Russia. **European Meeting of Statisticians**
w <https://ems2022.org/>

August 2022

 August 6–11: Washington DC, USA. **JSM 2022**
w <http://www.amstat.org/ASA/Meetings/Joint-Statistical-Meetings.aspx>

August 21–25: Newcastle, UK. **International Conference for Clinical Biostatistics** w <http://www.iscb.info/>


July 2023

July 15–20: Ottawa, Canada. **64th ISI World Statistics Congress**
w TBC

August 2023


 August 5–10: Toronto, ON, Canada. **IMS Annual Meeting at JSM 2023** w <http://www.amstat.org/ASA/Meetings/Joint-Statistical-Meetings.aspx>

August 2024

 August 3–8: Portland, OR, USA. **JSM 2024**
w <http://www.amstat.org/ASA/Meetings/Joint-Statistical-Meetings.aspx>

 August 12–16: Bochum, Germany. **Bernoulli/IMS World Congress in Probability and Statistics** w TBC

August 2025

 August 2–7: Nashville, TN, USA. **IMS Annual Meeting at JSM 2025** w <http://www.amstat.org/ASA/Meetings/Joint-Statistical-Meetings.aspx>

August 2026

 August 1–6: Boston, MA, USA. **JSM 2026** w <http://www.amstat.org/ASA/Meetings/Joint-Statistical-Meetings.aspx>

Are we missing something? If you know of any statistics or probability meetings which aren't listed here, please let us know.

You can email the details to Elyse Gustafson at ims@imstat.org, or you can submit the details yourself at <https://www.imstat.org/ims-meeting-form/>

We'll list them here in the Bulletin, and on the IMS website too, at imstat.org/meetings-calendar/

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The scientific journals of the Institute of Mathematical Statistics are *The Annals of Statistics*, *The Annals of Probability*, *The Annals of Applied Statistics*, *The Annals of Applied Probability*, and *Statistical Science*. The *IMS Bulletin* is the news organ of the Institute.

Individual Memberships

Each individual member receives the *IMS Bulletin* (print and/or electronic) and may elect to receive one or more of the five scientific journals. Members pay annual dues of \$105. An additional \$110 is added to the dues of members for each scientific journal selected (\$70 for *Stat Sci*). **Reduced membership dues** are available to full-time students, new graduates, permanent residents of countries designated by the IMS Council, and retired members.

Individual and General Subscriptions

Subscriptions are available on a calendar-year basis. **Individual subscriptions** are for the personal use of the subscriber and must be in the name of, paid directly by, and mailed to an individual. Individual subscriptions for 2021 are available to *The Annals of Applied Probability* (\$225), *The Annals of Applied Statistics* (\$225), *The Annals of Probability* (\$225), *The Annals of Statistics* (\$225), *Statistical Science* (\$185), and *IMS Bulletin* (\$115). **General subscriptions** are for libraries, institutions, and any multiple-readership use. Institutional subscriptions for 2021 are available to *The Annals of Applied Probability*, *The Annals of Applied Statistics*, *The Annals of Probability*, and *The Annals of Statistics* (each title \$525 online only / \$618 print+online), *Statistical Science* (\$301/\$352), and *IMS Bulletin* (\$146 print). Airmail delivery is no longer offered.

IMS Bulletin

The *IMS Bulletin* publishes articles and news of interest to IMS members and to statisticians and probabilists in general, as well as details of IMS meetings and an international calendar of statistical events. Views and opinions in editorials and articles are not to be understood as official expressions of the Institute's policy unless so stated; publication does not necessarily imply endorsement in any way of the opinions expressed therein, and the *IMS Bulletin* and its publisher do not accept any responsibility for them. The *IMS Bulletin* is copyrighted and authors of individual articles may be asked to sign a copyright transfer to the IMS before publication.

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A single 60-day online job posting costs just **\$329.00**. We will also include the basic information about your job ad (position title, location, company name, job function and a link to the full ad) in the *IMS Bulletin* at no extra charge. See <https://jobs.imstat.org>

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Meeting announcements here and on the IMS website at <https://imstat.org/meetings-calendar/> are free. Submit your meeting details at <https://www.imstat.org/ims-meeting-form/>

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2: March	February 1	February 15	March 1
3: April/May	March 15	April 1	April 15
4: June/July	May 1	May 15	June 1
5: August	July 1	July 15	August 1
6: September	August 15	September 1	September 15
7: Oct/Nov	September 15	October 1	October 15
8: December	November 1	November 15	December 1

the
next
issue is
June/July
2021

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of the **theory and applications of**
statistics and probability



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