Volume 49 • Issue 8

IMS Bulletin

December 2020

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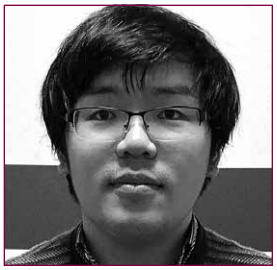
PhD Student Award winners

We are pleased to announce the recipients of the **2020 IMS Lawrence D. Brown PhD Student Award**: Xin Bing, Department of Statistics and Data Science, Cornell University; Ilmun Kim, Statistical Laboratory at the University of Cambridge (previously a PhD student at Carnegie Mellon); and Yichen Zhang, Krannert School of Management, Purdue University (previously a PhD student at Stern School of Business, New York University). They will deliver a paper at the 2021 JSM in Seattle.

Xin Bing

Ilmun Kim



Yichen Zhang

Xin's research interest generally lies in developing 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 model, topic models, minimax estimation, and so on; he is also interested in applications of statistical methods to genetics, neuroscience, immunology and other areas. Xin said, "Receiving this award is not only a reward of the past work during my PhD study, but also an encouragement to pursue more research goals in the future."

Ilmun's research interests are broadly in the areas of high-dimensional statistics, nonparametric inference and statistical learning theory. Currently, his focus is on developing and understanding distribution-free and robust methods applied to hypothesis testing problems. He is also interested in asymptotic theory, concentration of measure and minimax theory as tools for resolving and understanding modern statistical problems. Commenting on the award, he said it was a "great honor," adding, "I feel so grateful for this exceptional experience and I would like to sincerely thank my advisors and collaborators who have made this possible."

Yichen's research aims to address the challenges for modern types of data with new methodology developments lying on the interface between statistical inference, machine learning, and optimization. He designs technologies and methodologies in specific problems such as distributed learning, online stochastic optimization, and time series econometrics. He said, "Professor Brown set an admirable model for young statisticians. His dedicated contribution to the field great inspires my enthusiasm in many fields of theoretical and applied statistics. It is my greatest honor to receive the award. I will continue to pursue my academic career with meaningful and meritorious research."

Donations are welcome to the IMS Lawrence D. Brown PhD Student Award Fund: https://imstat.org/shop/donation/

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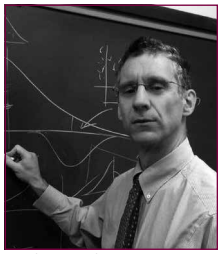
Executive Committee

IMS Members' News

American Academy of Arts and Sciences elects Andrew Gelman and Xiao-Li Meng

Some of the world's most accomplished leaders from academia, business, public affairs, the humanities, and the arts have been elected members of the American Academy of Arts and Sciences. Among those chosen this year were two IMS Fellows, Andrew Gelman (Columbia University) and Xiao-Li Meng (Harvard University). [Xiao-Li describes Andy Gelman as his "academic twin brother"!]



Andrew Gelman

Andrew Gelman has published influential applied papers on public opinion and voting, the death penalty (this paper was mentioned in a US Supreme Court opinion), redistricting, environmental decision making, and many other topics. He developed the method of multilevel regression and post-stratification, which is becoming increasingly popular in surveys in social science and public health. On the methods side, his work has been directly influential within the subfields of statistical modeling, computing, and graphics, where he has advanced, through theory and example, a "falsificationist" approach to Bayesian data analysis; and also more generally throughout science, via the development, with collaborators, of statistical methods and software that are used by thousands of researchers in government, industry, and academia.

Xiao-Li Meng

Xiao-Li Meng, the Whipple V. N. Jones Professor of Statistics, and the Founding Editor-in-Chief of *Harvard Data Science Review*, is well known for his depth and breadth in research, his innovation and passion in pedagogy, his vision and effectiveness in administration, as well as for his engaging and entertaining style as a speaker and writer. Xiao-Li is the recipient of numerous awards and honors, including the 2001 COPSS Presidents' Award, for his more than 150 publications in at least a dozen theoretical and methodological areas, as well as in areas of pedagogy and professional development. He has delivered more than 400 research presentations and public speeches on these topics, and he is the author our *XL-Files*. His interests range from the theoretical foundations of statistical inferences to statistical methods and computation to applications in natural, social, and medical sciences and engineering.

The 276 new AAAS members join one of America's most prestigious honorary societies. Members contribute to Academy studies of science and technology policy, global security, social policy and American institutions, the humanities, and education. The list of new Members is at https://www.amacad.org/new-members-2020.

WNAR Student Paper Award for Kwangho Kim

This June, the WNAR–IMS–JR (Japanese Region) meeting that was due to take place in Anchorage, Alaska, was canceled because of the pandemic. However, WNAR was committed to supporting student researchers and so the student paper competition still went ahead, with 24 students participating. One of the winners in the written category was Kwangho Kim, Carnegie Mellon University, who is an IMS student member, for his paper, "Causal Clustering". The other written category winner was Lingjing Jiang, University of California San Diego, and the winner in the oral category was Jinyuan Liu, UC San Diego. See http://www.wnar.org/news/9094133

More Members' News

Guggenheim Fellowship awarded to Kavita Ramanan

In its 2020 competition for the US and Canada, the John Simon Guggenheim Memorial Foundation has awarded its Fellowships to artists, scientists, and scholars, chosen from some 3,000 applicants. Only one fellowship was awarded this year in Applied Mathematics (none in Mathematics or Statistics): to our contributing editor, Kavita Ramanan. Kavita is the Roland George Dwight Richardson University Professor of Applied Mathematics at Brown University. She is an interdisciplinary researcher whose work transcends boundaries and combines tools from a broad array of fields, including discrete probability, stochastic analysis and partial differential equations. She has introduced novel perspectives and developed innovative mathematical techniques for the analysis of stochastic networks and interacting particle systems,. She has also made fundamental contributions to the study of large deviations or rare events, with applications to asymptotic convex geometry and high-dimensional statistics.

Kavita Ramanan

John Aston appointed Statistics Editor for *IMS Monographs* and *IMS Textbooks*

IMS Council recently approved the appointment of John Aston as statistics editor for the successful IMS–Cambridge University Press book series, *IMS Monographs* and *IMS Textbooks* (https://imstat.org/journals-and-publications/ims-monographs/) for a three-year term starting January 1, 2021. He takes over from Xuming He, and joins Nancy Reid (coordinating editor, 2018–2021), Ramon van Handel (Probability editor, 2018–2021), and Arnaud Doucet (Algorithms editor, 2020–2023).

John Aston is Professor of Statistics in the Statslab at the University of Cambridge and is currently on secondment as Chief Scientific Adviser to the UK's Home Office. His interests include all areas of Applied Statistics but particularly Statistical Neuroimaging and Statistical Linguistics. He also has an active collaboration with the Office for National Statistics. He has methodological interests amongst other things in functional data analysis, time series analysis, image analysis, changepoint analysis, and spatial-temporal statistics. From 2015–2017, he was a trustee and member of the board of directors of the Alan Turing Institute. Prior to being at Cambridge, he held academic positions at the University of Warwick and at Academia Sinica. He was secretary of the Royal Statistical Society Research Section during 2013–2014.

John's webpage is http://www.statslab.cam.ac.uk/~jada2/

Bin Yu builds better framework for more robust, trustworthy Data Science

UC Berkeley statistics Professor Bin Yu describes Data Science as a "field of evidence-seeking that combines data with information from a research domain information to generate new knowledge." Concerned with making this process more consistent and trustworthy, Bin has laid out her framework for integrating **p**redictability, **c**omputability and **s**tability (PCS) in a paper called "Veridical data science" (veridical meaning "truthful" or "coinciding with reality"), co-authored with her former student Karl Kumbier (now a postdoc at UCSF) and published in the *Proceedings of the National Academy of Sciences* in February 2020: https://www.pnas.org/content/117/8/3920.

Read more about Bin's research at https://data.berkeley.edu/people/bin-yu

Radu's Rides: Will the Future Mature?

Contributing Editor Radu Craiu writes: At the end of a year that felt like a decennium, it might be wise to remind ourselves that we are constantly torn between, on the one hand, the excitement of answering questions about the future *("What will it look like, and where do I fit in?")* and, on the other hand, the deflating realization that our imaginary trajectories tend to go off the rails *("Where did I go wrong?")*. Leaving aside the individual-level tribulations, one can ask, *"Where are Statistics and Data Science heading?"* and, *"What significant changes can we expect?"*

This is the kind of fun stuff that gets one in the doghouse, but let's try anyway to conjure up some futuristic visions, and break them down by activity.

Teaching

If you have been immersed in one of the disciplines at the core of Data Science, you may have been caught up in the maelstrom of creativity that has engulfed Statistics or Computer Science, but you may have missed the incredibly high demand from *other* disciplines for these core fields. Data Science is no longer desired only by its traditional dancing partners — Medicine, Astronomy, Finance, etc. — but also by Psychology, Political Science, English, History, Archeology and Philosophy. Their students will also want to dip their *curricula vitae* into DS's potent mix of good hiring chances, decent salaries and promising start-up benefits. In order to train them and influence their careers, we will need to adapt our teaching to cater to people without a ton of mathematical training, skills or abilities. The use of software will become ubiquitous, complementing the powerful principles we have been peddling for years, e.g. randomization in experimentation, restraint in modelisation, and skepticism in inference, to name a few of the ones that make us popular at parties. If thousands are already flooding Statistics and CS programs[1], tens of thousands will do so in the not-so-distant future. Our future selves will need to train those who will teach them the fundamentals of our discipline: we must rely on competent teachers to maximize benefits and minimize the potentially large damage that an improperly trained Bayesian, or any other sub-species of Data Scientist, can inflict on the world. Looking under the asymptotic hood is not for everyone and users of our methods should be allowed to safely avoid such curiosity, as long as they understand where the playground ends and the monsters roam. The high school curriculum will also have to change to account for the fact that, while less than 5% of graduates will end up calculating the roots of a polynomial of degree seven, more than 80% will need to understand odds-ratios and use regression in their daily interactions with the roulette that life sometimes becomes. (Disclaimer: these numbers are pure fiction and any resemblance to God's or other inventive souls' data is purely coincidental). This brings up a question that has long haunted Statisticians with dreams of a political career: how can we sell to the masses what Statistics can do, without scarring or scaring them off? A realistic, carefully thought-over answer to that question can only benefit the future of all.

Data

This is a category that currently does not exist separately, so its introduction is already significant. Our ability to collect data will explode. Imagine for a second that the Oculus will stay on as the dividing lines between virtual and real become even more blurry. Our cybernetic overlords will not only have access to our shopping carts, they'll be able to shop our whole lives. Personalized treatments, recommendations and customizable offers will be on the table. They will be available at different resolution levels, with granular resolution levels available only to top-level, or top-paying, customers. Methods for data anonymization, along with ethical issues related to their use, will only gain relevance, triggering changes in how we perceive privacy, how we legislate data collection and how we regulate information flow. The battlegrounds might move or expand from an individual's right to privacy, to entire countries' or continents'. Arms treaties will be emulated by data collaboration treaties, with rogues as clearly defined as friends. Companies will emerge or crumble according to their ability to harness the power of information. In 20–30 years, most of the population in the West will have 90% of their life documented on the web and stored in some data repository; the battles these people will fight for their right to be forgotten, not to mention forgiven, will reach previously unseen levels. Friends and foes will bow to a new God.

Research

This column has mentioned, maybe *ad nauseam,* the incredible volume of output from Data Science research. If anything, these trends seem to accelerate and overtake (or take over) the field of Statistics. The research community will have to adapt in order to handle the sheer volume and resulting pressure. We will move away from the solitary researcher model towards building teams or the type of consortia we currently see in the study of genetics, medicine and public health. Theoretical Statisticians will be seen as the cult inside Data Science, made up of people who obsess over

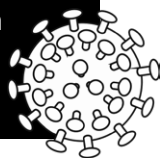
1 See 'Growing Pains and Gains in Statistics, the Toronto Way' (2018). *IMS Bulletin*, 47(6).

minutiae and from time to time emerge from obscurity to play pivotal roles for very short times… so, nothing much will change there. I suspect that computation will become even more enmeshed with inference, and the pressure of applications will diminish the unhealthy reliance on unrealistic or uncheckable model assumptions. A new Box-ian phrase will emerge: "All models are regression-based, but only some are linear". Closed form estimators will be all but nonexistent, forcing us to evaluate uncertainty in novel ways. Data will often reach the analyst after they have been heavily privatized, thus requiring essential new methods to recover as much of the original truth as possible. Most importantly, in a world in which attention span will be measured in seconds, data-based decisions will need to be made in milliseconds. Even after accounting for a tremendous increase in computing power, this constraint will spur interest in approximation methods and computational tricks that can short-circuit the processing of terabytes of data in the blink of an eye.

Disciplines tend to take on a life of their own. The future DS ecosystem will split or expand according to tensions or priorities that are impossible to predict. But if I had a penny for every time I said "data" in the last 25 years, I would bet all of that money on DS staying at the center of human endeavours for the foreseeable future.

IMS members' work on COVID-19

A couple more IMS members wrote to share what they have been working on, around COVID-19. If you'd like a mention in the next issue, please contact ims@imstat.org (send a paragraph about your work, and a link to the paper, or location where interested readers can find out more). **Our next deadline is December 1, then February 1.**



Ioannis Kontoyiannis
Department of Pure Mathematics and Mathematical Statistics, University of Cambridge, UK

Ioannis writes, "In collaboration with Jussi Taipale (a colleague from Biochemistry here in Cambridge) and Sten Linarsson (a molecular biologist at the Karolinska Institute in Stockholm), we propose a non-pharmaceutical intervention that would allow rapid control of the Covid-19 pandemic. The intervention is based on: (1) randomly testing every individual, (2) repeatedly, and (3) isolation of infected individuals. Using both a deterministic SIR model, and randomized, continuous-time Reed–Forest epidemic models on general random networks, we rigorously determine the necessary rate of testing for the pandemic to be quickly suppressed. Our results imply that the reproduction number of Covid-19 can be brought well below 1, even with rapid antigen tests having very low sensitivity, with limited quarantine compliance, and with perfectly realistic testing rates. Moreover, we show that this approach is robust to failure—any rate of testing will significantly reduce the size of the pandemic, improving both public health and economic conditions.

The research is available as a preprint (https://www.dpmms.cam.ac.uk/~ik355/PAPERS/CovidTesting.pdf) and as a seminar talk: https://www.youtube.com/watch?v=xEeEaCB2-qY

Klaus Krickeberg
Retired Professor of Statistics

IMS Fellow Klaus Krickeberg, together with Bernhelm Booß-Bavnbek, wrote an article called "Dynamics and Control of Covid-19: Comments by Two Mathematicians" that appeared in the September 2020 issue of the *Newsletter of the European Mathematical Society*. In the article, they pose the question: "Why are the dynamics and control of Covid-19 most interesting for mathematicians, and why are mathematicians urgently needed for controlling the pandemic?"

In the first part of the article, they examine the historical and country-specific contexts and responses, including the public health element. In the second part, the focus is "…not 'country-oriented' but 'problem-oriented'. From a given problem [they] go 'top-down' to its solutions and their applications in concrete situations." They organised this by the mathematical methods that play a role in their solution, and examine the particular need for mathematics in the development of a vaccine and the strategy for applying it "without losing sight of basic ethical principles."

You can read the article on pages 29–37 of the EMS Newsletter, issue 117: https://www.ems-ph.org/journals/newsletter/pdf/2020-09-117.pdf

COPSS and Friends

The Committee of Presidents of Statistical Societies held its "COPSS and Friends" meeting in August, with representatives from COPSS itself (Bhramar Mukherjee and Huixia Judy Wang), and from its founding societies: **the American Statistical Association, ASA** (Wendy Martinez, Ron Wasserstein), **Eastern North American Region International Biometric Society, ENAR** (Michael Daniels, Sarah Ratcliffe), **IMS** (Krzysztof Burdzy), **Statistical Society of Canada/Société statistique du Canada, SSC** (Wendy Lou, Shirley Mills, Bruce Smith, Grace Yi) and **Western North American Region of The International Biometric Society, WNAR** (Katerina Kechris, Ying Lu).

In addition there were representatives from the "Friends" societies: the **Bernoulli Society for Mathematical Statistics and Probability** (Claudia Klüppelberg), **Caucus for Women in Statistics, CWS** (Jessica Kohlschmidt), **International Chinese Statistical Association, ICSA** (Tony Jianguo Sun), **International Indian Statistical Association, IISA** (Sanjib Basu), **International Society for Bayesian Analysis, ISBA** (Igor Pruenster), **International Statistical Institute, ISI** (John Bailer), **Korean International Statistical Society, KISS** (Don Jang), **National Institute of Statistical Sciences, NISS** (James Rosenberger), **Royal Statistical Society, RSS** (Deborah Ashby), and the **Statistical Society of Australia, SSA** (Jessica Kasza).

At the meeting, each society outlined the highlights of their goals and objectives, and there were discussions about the various society initiatives on Diversity, Equity and Inclusion; what Data Science research was taking place during the pandemic; virtual leadership of societies and conferences; and communication and coordination among societies generally. A proposal for the COPSS Leadership Academy was also on the agenda.

You can read the call for nominations for the five COPSS Awards (Presidents' Award, Distinguished Achievement Award and Lectureship, Snedecor Award, David Award and Lectureship, and the new COPSS Leadership Academy Award) for 2021 on the following page.

Find out more about COPSS at https://community.amstat.org/copss/home.

Nominations sought for 2021 COPSS Awards

Please visit https://community.amstat.org/copss/home for details of eligibility and nomination requirements for all these awards. Please send your nomination, preferably by email in PDF format, to the committee chair for each award. The deadline for all nominations is December 15, 2020, apart from the Leadership Academy Award, which is January 15, 2021.

NEW AWARD: COPSS Leadership Academy Award

The **COPSS Leadership Academy Award** was established in 2020 to recognize early-career statistical scientists who show evidence of and potential for leadership, and who will help shape and strengthen the field. The award is designed both to call attention to the efforts of these individuals and to provide a mechanism for them to share their vision for the field with each other and the statistical community.

Note updated eligibility criteria: The award is open to all junior members of the international statistical community. An eligible candidate will have received a terminal statistically-related degree up to 10 years prior to the award year. In special circumstances (e.g., illness, childbirth, dependent care), the eligibility period may be extended by up to two years, but in this case the nomination letter should outline the special circumstances. These determine only eligibility, and do not otherwise affect the selection process. Nominees must also be a member of at least one of the COPSS and Friends Societies [*see article on previous page*].

Nominations must be sent by January 15, 2021, preferably by email in PDF format, to:

Catherine Calder, Chair, COPSS Leadership Academy Award Committee, and Professor, Department of Statistics and Data Sciences
The University of Texas at Austin
e calder@austin.utexas.edu

Details on selection criteria and nomination process: https://community.amstat.org/copss/awards/leadership-academy

COPSS Presidents' Award

The Presidents' Award is presented annually to a young member of one of the participating societies of COPSS in recognition of outstanding contributions to the statistics profession. It is typically granted to an individual who either (i) has not yet reached his or her 41st birthday during the calendar year of the award or (ii) will be under age 46 throughout the award calendar year and will have received a terminal statistically-related degree no more than 12 years prior to that year (see COPSS website for more details on eligibility criteria).

Send nominations by December 15 to **Paul Gustafson**, Chair, COPSS Presidents' Award Committee, and Professor, Department of Statistics, University of British Columbia
e gustaf@stat.ubc.ca

George W. Snedecor Award

The George W. Snedecor Award is presented biennially (odd-numbered years) to honor an individual who has been instrumental in the development of statistical theory in biometry and with a noteworthy publication in biometry within three years of the date of the award.

Send nominations by December 15 to **Kerrie Mengersen**, Chair, COPSS GW Snedecor Award Committee, and Professor of Statistics, Queensland University of Technology
e k.mengersen@qut.edu.au

Distinguished Achievement Award and Lectureship

The Distinguished Achievement Award and Lectureship is given yearly to an individual in recognition of outstanding contributions to statistical methods that have had significant impact on scientific investigations. This award was formerly known as the RA Fisher Lectureship award from 1963–2019. The 2021 award winner will deliver the lecture at the JSM in Seattle.

Send nominations by December 15 to **Daniela Witten**, Chair, COPSS Distinguished Achievement Award and Lectureship Committee, and Professor, Department of Biostatistics, University of Washington
e dwitten@uw.edu

F.N. David Award and Lectureship

The F.N. David Award and Lectureship are presented biennially (odd-numbered years) to a female statistician who serves as a role model to other women by her contributions to the profession through excellence in research, the leadership of multidisciplinary collaborative groups, statistics education, or service to the professional societies. The 2021 award winner will deliver the F.N. David Lecture at the JSM in Seattle.

Send nominations by December 15 to **Nancy M. Gordon**, Chair, COPSS F.N. David Lecture and Award Committee, and Retired Associate Director for Innovation, US Census Bureau
e nancymg@mac.com

Celebrate Women in Statistics and Data Science

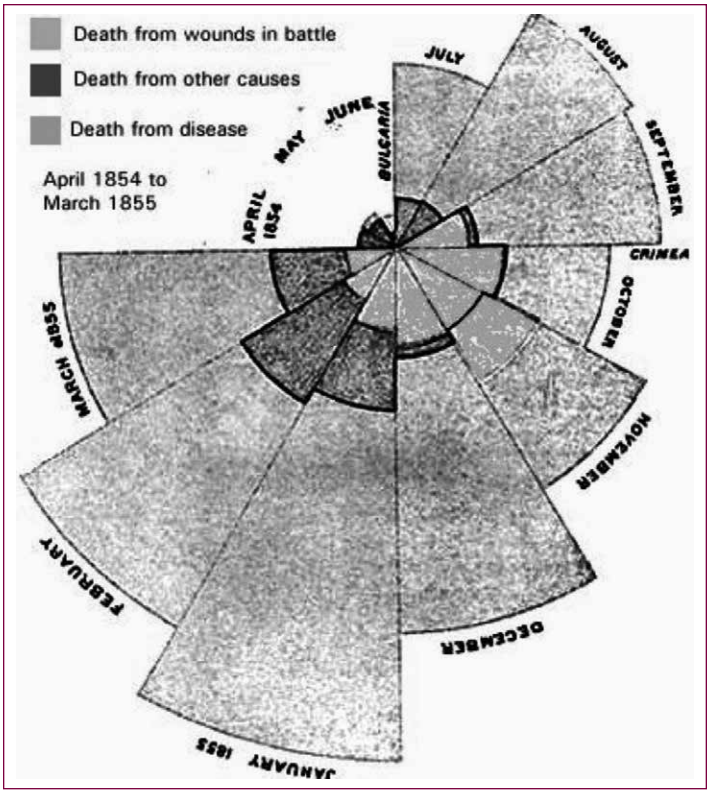
ISI marks the International Year of Women in Statistics and Data Science

Join the International Statistical Institute, ISI, in celebrating the International Year of Women in Statistics and Data Science (#IYWSDS) from May 2020 through July 2021. The IYWSDS was launched on 12 May 2020 with commemorating the 200th anniversary of Florence Nightingale's birth. A list of ways in which you can participate is at **https://www.isi-web.org/iywsds** (some of these have now passed, but more will be coming so bookmark the page). Two presentations about Florence Nightingale are also on that page, by Jessica Utts and Jacqueline Meulman.

But who was Florence Nightingale? And why is she significant to us?

On 12 May 2020, it was the 200th anniversary of Florence Nightingale's birth. Nightingale (12 May 1820–13 August 1910) was a British social reformer and statistician, and the founder of modern nursing. She came to prominence while serving as a manager and trainer of nurses during the Crimean War, in which she organised care for wounded soldiers, earning her the nickname "The Lady With The Lamp," [*as illustrated, right*].

In 1860, Nightingale laid the foundation of professional nursing with the establishment of her nursing school at St Thomas' Hospital in London. It was the first secular nursing school in the world and is now part of King's College London. There's an interesting museum dedicated to Nightingale, her life and legacy, at St Thomas' Hospital: https://www.florence-nightingale.co.uk.



Credit: Wellcome Library, London. CC BY 4.0

Above: "An Angel of Mercy", Florence Nightingale with her candle making the night round of the wards at Scutari hospital.

In her lifetime, Nightingale published work concerned with spreading medical knowledge. She was a pioneer in the development of statistical graphics to visually represent data and developed diagrams called coxcombs [*left*], using them to illustrate the various causes of death during the Crimean War—in particular, that far more soldiers died from infectious diseases than in battle—leading to life-saving political changes and sanitation improvements.

Florence Nightingale was the first female member of the Royal Statistical Society. She also had a pet owl, called Athena.

Nominate for an IMS Award

Peter Gavin Hall IMS Early Career Prize

https://www.imstat.org/ims-awards/peter-gavin-hall-ims-early-career-prize/

Peter Hall played a significant role throughout his professional career in mentoring young colleagues at work and through professional society activities. The Peter Gavin Hall Early Career Prize recognizes early career (PhD in 2013-2020) research accomplishments and research promise in statistics, broadly construed. Nomination deadline is December 1.

Tweedie New Researcher Award

https://imstat.org/ims-awards/tweedie-new-researcher-award/

The 2021 Tweedie New Researcher Invited Lecture will be delivered at the 2021 New Researchers Conference, immediately before JSM in Seattle (meeting details to follow). New researchers (PhD in 2016–2020), who are members of IMS, are eligible. Nominations for the award are due December 1.

IMS Fellows

https://www.imstat.org/honored-ims-fellows/nominations-for-ims-fellow/

Past IMS President Alison Etheridge called for more diversity in Fellows nominations [*see Philip Protter's article in the Oct/Nov 2018 issue for some words of advice*]. Candidates for IMS Fellowship shall have demonstrated distinction in research in statistics or probability, by publication of independent work of merit. This qualification may be partly or wholly waived in the case of either a candidate of well-established leadership whose contributions to the field of statistics or probability other than original research shall be judged of equal value; or a candidate of well-established leadership in the application of statistics or probability, whose work has contributed greatly to the utility of and the appreciation of these areas. Candidates for fellowship should be members of IMS when nominated (you can email Elyse Gustafson erg@imstat.org to check this before you start). The nomination deadline is January 31.

Harry C. Carver Award

https://www.imstat.org/ims-awards/harry-c-carver-medal/

Nominations are invited for the Carver Medal, created by the IMS in honor of Harry C. Carver, for exceptional service specifically to the IMS. All nominations must be received by February 1.

…or apply for a Travel Award

Applications are also open for our two travel awards. The **IMS Hannan Graduate Student Travel Award** funds travel and registration to attend (and possibly present a paper/poster at) an IMS sponsored or co-sponsored meeting. This award is for graduate students (Masters or PhD) in statistics or probability. If you are a New Researcher (awarded your PhD in 2015–20), you should apply for the **IMS New Researcher Travel Award** to fund travel, and possibly other expenses, to present a paper or a poster at an IMS sponsored or co-sponsored meeting. Applicants must be members of IMS, though joining as you apply is allowed (student membership is free and new graduate membership discounted!). The deadline for both is February 1, 2021. See https://www.imstat.org/ims-awards/ims-hannan-graduate-student-travel-award/ and https://www.imstat.org/ims-awards/ims-new-researcher-travel-award/.

Don't be SHY

If you've won an award, please tell us (and we'll tell everyone else!)

Recent papers

Statistical Science

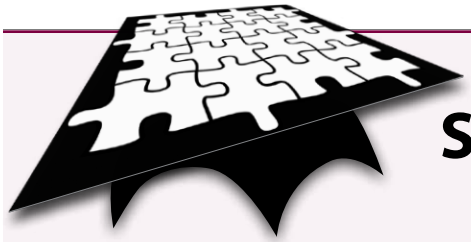
The central purpose of *Statistical Science* is to convey the richness, breadth and unity of the field by presenting the full range of contemporary statistical thought at a moderate technical level, accessible to the wide community of practitioners, researchers and students of statistics and probability. Access papers at **https://projecteuclid.org/info/euclid.ss**

Volume 35, No. 3, August 2020: Special Issue on Causal Inference

Bernoulli

Bernoulli is the journal of the Bernoulli Society for Mathematical Statistics and Probability. It is an IMS-supported journal, providing a comprehensive account of important developments in the fields of statistics and probability. The Editors-in-Chief are Mark Podolskij and Markus Reiß. Access papers at **http://projecteuclid.org/euclid.bj**

Volume 26, No. 4, November 2020



Student Puzzle Corner 31

Puzzle Editor Anirban DasGupta set this "more or less textbook problem" in the last issue. It pertains to various important questions on linear polymers. He says, "It will be easy for you to read about the connections; you can figure out most of the parts very quickly." Here is the problem:

Imagine a particle conducting a walk on the traditional square lattice, starting at the origin (0, 0). That is, at any time during the walk, the particle goes one unit distance to either the east, or the west, or the north, or the south. An n-walk is a walk that has taken n steps. The walk is called *self-avoiding* if the particle does not visit any given state twice.

Let $f(n)$ denote the number of n-walks that are self-avoiding.

(a) Compute $f(n)$ for $n = 2, 3$, and justify how you got these values.

(b) Compute $f(4)$ if you can, or place it within good lower and upper bounds.

(c) Try to give non-trivial lower and upper bounds on $f(n)$ of the form $c\,k^n$ for $c > 0$ and k a positive integer.

Deadline: December 1, 2020

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.

Auditor's Report 2019

The IMS Treasurer's annual report was published on page 16 of the September 2020 issue of the *IMS Bulletin*, which you can download from the website at https://imstat.org/wp-content/uploads/2020/08/Bulletin49_6-TR.pdf. The report details membership and subscription data for the calendar year end 2019.

The 2019 fiscal year-end audit report has now also been completed, and it is posted online on the Council Reports page: https://imstat.org/council-reports-and-minutes/.

Institute of Mathematical Statistics

Statement of Financial Position

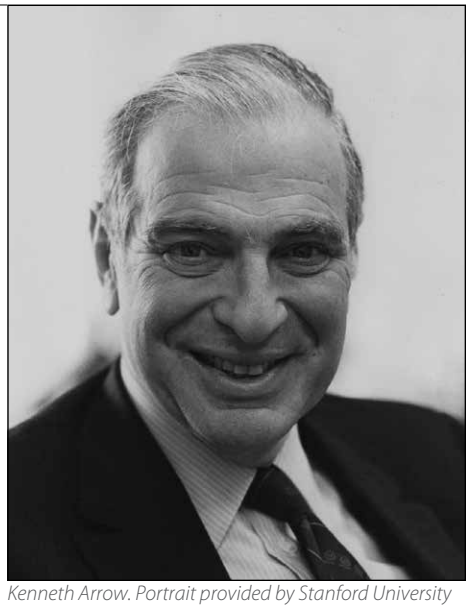
December 31, 2019 (with comparative totals for 2018)

	2019	2018
Assets		
Cash and cash equivalents	$ 185,341	$ 453,820
Cash held for others	14,183	19,371
Accounts receivable, net	135,675	200,844
Interest receivable	10,228	5,144
Investments	8,113,941	6,644,726
Investments held for others	259,564	218,023
Prepaid expenses	64,096	65,313
Certificates of deposit	1,793,003	1,447,186
Investments restricted for endowment	270,995	218,803
Total assets	$ 10,847,026	$ 9,273,230
Liabilities and Net Assets		
Liabilities:		
Accounts payable and accrued expenses	$ 41,912	$ 54,378
Fiscal agent liability	273,747	237,394
Unearned memberships, subscriptions, and meeting revenues	1,095,648	1,417,273
Total liabilities	1,411,307	1,709,045
Net assets:		
Without donor restrictions:		
Undesignated	6,930,947	5,162,007
Council-designated	2,115,880	2,120,436
Total net assets without donor restrictions	9,046,827	7,282,443
With donor restrictions	388,892	281,742
Total net assets	9,435,719	7,564,185
Total liabilities and net assets	$ 10,847,026	$ 9,273,230

Obituary: Kenneth Joseph Arrow

1921–2017

Nobel Prize-winning economist Kenneth Arrow was a leading figure in the field of economic theory. Although he passed away in 2017, we only learned of this more recently, in the compilation of the IMS Scientific Legacy Database. Arrow was an IMS Fellow, among his many honors.



Kenneth Arrow. Portrait provided by Stanford University

It is not an exaggeration to say that Kenneth Arrow's first (intellectual) love was mathematical statistics and this was consolidated by working under Harold Hotelling, one of the three original voting fellows of the IMS at its founding in Ann Arbor, in September 1935; Hotelling, for whom Arrow had profound respect, was not only a member of the Editorial Board of the *Annals of Mathematical Statistics,* but was also a past president on the IMS. It is, therefore, not surprising that Arrow was elected as a Fellow of IMS!

Kenneth Arrow was a pure New York bred and educated intellectual, of proud Jewish heritage; born in 1921, he was educated at Townsend Harris High School in New York City and his undergraduate studies in Social Science, with a major in Mathematics, were at the "poor man's Harvard," *viz* City College of New York. Arrow was influenced by two outstanding pioneers in the field of computability theory and mathematical logic, respectively: Emil Post and Alfred Tarski.

Staying in New York, Arrow did his master's and doctoral degrees at Columbia University, in mathematics and economics, with Hotelling for the former and with A.G. Hart for the latter. He obtained the master's degree in 1941 and graduated with the doctoral degree in 1951, with some of the interim years spent in war service, research and consultancies (the last two to supplement his modest income).

Among the reasons he was chosen to receive the Nobel Memorial Prize in Economics, in 1972 (shared with Sir John Hicks), were that he provided the welfare economic underpinnings of *General Competitive Analysis* (the title of his highly successful and timely book with Frank Hahn). That paper was published in the *Berkeley Symposium on Mathematical Statistics and Probability*, edited by Jerzy Neyman (Arrow, 1950). His contribution to the founding of — in his brother-in-law, and fellow Nobel Prize winner in economics, Paul Samuelson's words — mathematical politics, i.e., social choice theory, was also developed before his PhD! Only fix-point equilibrium theory was left for a later *Econometrica* paper (Arrow & Debreu, 1954).

Especially in the years 1956 to 1958 Arrow was concerned with computational issues in mathematical economics, to the extent that, in his Presidential address to the Econometric Society (Arrow, 1957), which was remarkable because he was only in his late 30s, he considered computational methods as pivotal to any decision problem in economics.

Indeed, many of the concepts and tools that he worked with, and made famous, had their first airing in this lecture: equilibrium, optimality, efficiency, convexity, rationality, information, competition, utility, approximation, time, uncertainty, the principle of optimality [Rufus Isaacs with his "tenet of transition" may have been earlier], rules-versus-discretion in economic policy, (linear) programming, and more. I believe that his work in trying to understand optimal inventory policy is in the same league as his path-breaking contribution to medical insurance. A master theoretician, Arrow's theoretical insights were tempered by practical feasibility — in economic policy, of a social and political nature.

His academic life, as a member of faculties, was spent at Harvard and Stanford universities. At Stanford, he played a major role in founding the department of Operations Research. As a member of the Cowles Foundation he was briefly also in the Department of Economics at the University of Chicago, in addition to being a consultant at the RAND Corporation in Santa Monica. When he retired from active duties at Stanford in 1991, he was the Joan Kenney Professor of Economics and Operations Research.

Arrow was active, as a member, Fellow, Council Member or President, in numerous academic societies. He was awarded numerous prizes by academic and professional societies and lectured widely, as visiting professor and invited distinguished lecturer, at prestigious US and foreign universities and institutions.

Arrow always "asked the hard questions" (*pace* Auden) but in a simple, even disarming, way.

Kenneth Arrow died on 21 February 2017 in Palo Alto, California.

K. Vela Velupillai

This obituary draws a great deal on those Vela wrote for the *Biographical Memoirs of Fellows of the Royal Society* (Vol 67, 2019) and *Nature* (Vol 543, 2017); we thank their editors.

One World Symposium: Leif Döring interviewed

Members of the Bernoulli Society's Young Researchers Committee—Imma Curato, Sandro Gallo and Zhenhua Lin—interviewed Leif Döring, who acted as chair of the organizing committee of the first Bernoulli–IMS One World Symposium, which took place online August 24–28, replacing the World Congress in Seoul, which is now rescheduled to July 19–23, 2021. Leif is a full professor in the Institute of Mathematics at the University of Mannheim in Germany. This interview, and a report of the meeting, appeared in the November 2020 issue of *Bernoulli News*: **http://www.bernoulli-society.org/files/BernoulliNewsNovember2020.pdf**. Thanks to *BN* editor Manuele Leonelli for permission to reprint it here, slightly condensed.

What were the main goals of the first virtual Bernoulli–IMS One World Symposium?

Leif Döring: *From the very beginning, there were two major goals: to open the virtual scene for young researchers and to move towards changing the travel attitude in our research community. Most virtual seminars that appeared in 2020 cover almost exclusively well-known senior speakers (including the One World Probability Seminar that I am involved in). Young researchers can now attend many talks, which is nice, but have little space to present their own results. We thought it was important to set up a large event in which* ***as many people as possible could present and discuss their recent work****. Additionally, 2020 seemed to be the right year for major improvements towards a* ***more ecological research world****. We have been discussing with many people how to reduce our carbon footprint by making parts of our meetings virtual, but we never started. A big advantage of this special year seems to be that people are very forgiving, so with the symposium we tried to do several steps at once. We hoped to introduce new virtual features and prove that large scale meetings can work without any travel.*

Give us a quick overview of the positive and negative outcomes of the Symposium.

Like many other virtual activities this year, the symposium was set up without much preparation and without any past experience. This makes me feel less negative about parts that went less well than others. The main lesson we – and other organizers of virtual conferences – learned this year is that the online environment of a virtual conference creates different dynamics. Participants are more selective. A direct translation of regular conferences to the virtual world does not work particularly well. Regular conferences seem to profit strongly from group effects which are absent in the virtual setting. In the virtual world it is more important to involve participants actively, and it is harder to have strong participation in plenary events. That being said, the most positive outcome were the ***pre-recorded talks with live-discussions****. Roughly 600 participants registered to present a talk, and almost all managed to produce a 10-minute video themselves, which were of a very high standard. In inverted-classroom style, videos were made accessible to all participants a week before the symposium, and were discussed in 110 live sessions during the symposium week. Many live discussions went extremely well, with some having 50 participants discussing 3–8 talks; the average was about 20 participants. I would also count the* ***new researcher events*** *as being very successful. Events of that kind should be continued in the future in a virtual format to give young researchers without a travel budget access to insider information. On the negative side, I should mention some more experimental features that we tried. "Ask Me Anything" sessions, where a senior researcher offered 30 minutes of their time to all interested young researchers for a virtual discussion, were not very well attended. This was a surprise as such meetings are hard to have during regular conferences. It also took some time until the coffee gardens (places for social interactions during coffee breaks) were frequented more. We need to carefully explain and communicate all new features!*

Did the 2020 Online World Symposium establish a new paradigm for big meetings? Is the virtual format preferable? And do you think online events could *completely substitute* in-person events?

There is no doubt that most of us researchers like to travel, and would prefer to continue as we are used to. In a perfect world I would also rather attend a conference in person, not least for the social aspects, but this is unfortunately not the world we live in. Climate change forces us all to rethink our actions, and for our community this means drastically changing our travel habits. Do we have a choice of whether to move more towards virtual events or not? Not in my view.

I do believe that small, specialist workshops are still preferable in person, since this is where the real work is done and young researchers get to know their close community in person. The situation is different for big generalist conferences, which I think should always become virtual – except for local meetings where people can travel without flying. The symposium has proven that a large generalist conference can be completely substituted, and in some ways improved, by moving to the virtual world. Since a big meeting is aimed far more towards gaining an overview over different fields than on specific research work with collaborators, the selective nature of virtual events becomes an advantage. We had enthusiastic feedback from many participants concerning the possibility of ***browsing (some at 1.5× speed) through many pre-recorded talks*** *and then discussing the ones of specific interest with the speaker during the live*

Continues on **page 15**

Leif received a plaque in recognition of his "exceptional creativity and commitment" from the Bernoulli Society and IMS Presidents, Claudia Klüppelberg and Susan Murphy

sessions. With this efficiency, participants can be simultaneously more broad and more specialized with the same investment of time. The symposium was also ***more inclusive*** *than comparable events as it did not require travel budgets. We saw* ***many participants from developing countries*** *who could not afford long-distance travel. Since big meetings aim at gathering the community, an increase of inclusivity is a big plus.*

We have a unique opportunity to use the situation in 2020–21 to take a big step towards a more sustainable research world. I am happy the symposium was one example among many others that proved that more ecological substitutes can really work!

Does attending online conferences bring a better work-life balance? On the one hand, many more people are able to attend the event, but on the other it is possible that they are less able to dedicate themselves fully to it (due to being at home, family, teaching duties...)

This year we are facing two effects at once: the rise of virtual activities and the COVID pandemic. The pandemic forces us to spend far too much time in video calls, and for many has also created delicate situations at home. This naturally decreases the desire to spend more time online in virtual seminars and conferences. It will be interesting to see the reaction to virtual conferences in regular times, when we are not so tired of online activities.

It will also take some time for the community to accept that ***a virtual conference is a conference and as such should be treated as a full-time commitment****. I had a chat in the coffee gardens with a postdoc who claimed the symposium was the most useful conference he had attended, both in terms of Mathematics and socializing/networking. Just as for a regular conference, he committed his entire week to the symposium in order to get as much as possible from the symposium (several ask-me-anything sessions, plenty of live discussions and plenary talks, and discussions in the coffee gardens continued by extensive discussions on Zoom). This is something to learn for future virtual events in non-pandemic times: fix the week, go to the office, pretend you are away for a conference. I definitely consider evenings spent at home with family and friends, and no weekends or nights at airports, to be a better work-life balance!*

Could you give us some details on the way the event was organized? For instance, how many people were involved in organizing the conference? How much time did the organisation take? And was it less work than organizing a standard in-person event?

Three months before the symposium we started to discuss first ideas, set up a website, and sent out the announcement. ***Things moved very fast****, and we were still clarifying the main ideas in the weeks running up to the event. The organisation team consisted of Siva Athreya, Andreas Kyprianou, Jean-Christophe Mourrat, Christian Robert, and myself. Since there was not enough time to involve further committees, all decisions were taken by ourselves and the presidents of the Bernoulli Society (Claudia Klüppelberg) and IMS (Susan Murphy). The lack of time forced us to be extremely efficient regarding discussions and decisions, and a topic rarely took more than a day from first idea to decision. This is very unusual but is the only way to organize a major conference in so little time.*

I found the organisation of virtual activities to be far simpler than is typical for in-person events. The focus of a virtual event lies almost entirely on the scientific content, and much of the work required by a regular event – coffee breaks, conference dinner, hotels for participants, venues, etc – is non-existent. I estimate that the entire organisation of the symposium would have taken 10 weeks for one person working full-time. Since this was the first edition it was hard to delegate work; for future events the work could be significantly optimized. It is crucial to use good tools for registration, but all are available for free. A professional partner could be involved to reduce the workload, but in my eyes the benefits do not justify the costs. By not involving a professional partner we were able to run the symposium ***completely free of charge*** *for everyone, a goal we set ourselves at the outset in order to be as inclusive as possible.*

Do you have any advice for the organizers of an online conference in the future?

Don't try to mimic a regular conference, be more interactive*: the inverted-classroom style talks seem to be a step in the right direction. All new features must be explained well, otherwise people won't take advantage of them. It is also important to explain to participants how they can get the most out of the conference. In particular, young researchers might be encouraged to rethink how to organize their time in an optimal way. A virtual conference should be seen as a legitimate conference, with serious time devoted to all opportunities. On the technical side, be careful when selecting streaming software. Currently Zoom seems a good choice, as it can handle large audiences and is cheap, but there will certainly be alternatives appearing in the next few years.*

IMS meetings around the world

Joint Statistical Meetings: 2021–2026

IMS sponsored meeting

UPDATED

JSM 2021

August 7–12, 2021. Seattle, USA.

w https://ww2.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. Propose a topic-contributed session for JSM 2021! Topic-contributed sessions are a great way to bring speakers together to present about a shared topic, so if you have a great idea for a JSM session, see https://ww2.amstat.org/meetings/jsm/2021/submissions.cfm. There is only room for a limited number of these sessions, so note the deadline for proposals is **December 10**.

IMS sponsored meetings: JSM dates for 2022–2026

2022 Joint Statistical Meetings	**IMS Annual Meeting @ JSM 2023**	**JSM 2024**	**IMS Annual Meeting @ JSM 2025**	**JSM 2026**
August 6–11, 2022	**August 5–10, 2023**	**August 3–8, 2024**	**August 2–7, 2025**	**August 1–6, 2026**
Washington DC	**Toronto, Canada**	**Portland, Oregon, USA**	**Nashville, TN, USA**	**Boston, MA, USA**

NEW

Seminar on Stochastic Processes (SSP) 2021

March 17–20, 2021

Lehigh University, Bethlehem, PA, USA

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

At SSP2021, apart from informal presentations by conference participants, there will be plenary talks by **Alexei Borodin, Jennifer Chayes, Tadahisa Funaki, Dmitry Ioffe, Sarah Penington, and Makiko Sasada**. The main conference will be held on March 18–20, 2021; on March 17, there will be a special set of **tutorial lectures by Greg Lawler** and **discussions targeted at early-career researchers**.

Travel funding: We expect this conference will be supported with funds to allow reimbursement of travel expenses. Graduate students, early-career researchers, women, and members of under-represented groups are especially encouraged to register and apply for funds. Applications will be accepted soon on the conference website, and should be received by **end of January**, 2021 for first consideration.

SSP 2021 is currently planned to be held in-person, with suitable COVID-19 precautions, to the extent possible given the evolving public health situation. Remote conference participation options will be implemented as appropriate.

Further information on funding, accommodations, conference participation modalities, and other details, including the online registration form, will be available soon on the website.

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.

NEW

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

WNAR/IMS/KISS/JR Annual Meeting
http://www.wnar.org/

8th Workshop on Biostatistics and Bioinformatics
https://math.gsu.edu/yichuan/2020Workshop/

REARRANGED:

Frontier Probability Days
May 16–18, 2021, Las Vegas, Nevada
w http://lechen.faculty.unlv.edu/FPD20/
Registration open until March 16, 2021.

Mathematical Statistics and Learning
June 1–4, 2021, Barcelona, Spain.
w https://www.msl2020.org/

Statistics in the Big Data Era
June 2–4, 2021, UC Berkeley, CA, USA
w https://simons.berkeley.edu/workshops/statistics-big-data-era

Bernoulli–IMS World Congress 2020
July 19–23, 2021, Seoul, South Korea
w https://www.wc2020.org/

IMS Asia Pacific Rim Meeting 2022
January 4–7, 2022, Melbourne, Australia
w http://ims-aprm2021.com/

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. So if you are interested in the ABC world seminar and would like to hear from us fortnightly about the announced speaker, title and abstract and, most importantly, be able to join the talk, please register at the website above.

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!

UPDATED

IMS sponsored meeting

March 14–17, 2021: Baltimore, MD, USA
w www.enar.org/meetings/spring2021/
Online registration coming soon! We have delayed opening registration for the ENAR 2021 Spring Meeting, because ENAR's highest priority is the health of our members and meeting attendees. We are monitoring the pandemic closely and will make final decisions on the format and registration closer to 2021.

2022 ENAR meeting:
March 27–30, 2022. Houston, TX, USA

UPDATED

ABC in Svalbard
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.

As the meeting is limited in size and located in a remote area of the world, **mirror meetings will take place in Brisbane, Coventry and Paris**, towards gathering participants unable or unwilling to travel to Longyearbyen. They will include live talks by local speakers, live interaction with the happy few in Longyearbyen (time zone permitting), and further discussions of the remote talks. Any volunteer in setting another mirror meeting should contact one of the organizers.

IMS sponsored 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

Other meetings and events around the world

ICSA 2020 Applied Statistics Symposium
NOW ONLINE December 13–16, 2020
w https://symposium2020.icsa.org/

Due to COVID-19, the Organizing Committee has decided to move the symposium online, December 13–16 (Sunday–Wednesday), 2020. The theme of this conference is *Advancing Statistics for Data Intelligence*. The Early Bird registration deadline has passed; regular rates apply. Career service is available for registered conference attendees for free All the conference activities and events (including Monday night mixer/live poster session and Tuesday night award ceremony) will be scheduled as virtual events.

Keynote speakers and abstracts:

Xihong Lin, Harvard University
Learning from COVID-19 Data in Wuhan, USA and the World on Transmission, Health Outcomes and Interventions

COVID-19 is an emerging respiratory infectious disease that has become a pandemic. In this talk, I will first provide a historical overview of the epidemic in Wuhan. I will provide the analysis results of 32,000 lab-confirmed COVID-19 cases in Wuhan to estimate transmission rates, the multi-faceted public health intervention effects that helped Wuhan control the COVID-19 outbreak, and epidemiological characteristics of the cases. I will present the results using the transmission dynamic model that show two features of the COVID-19 epidemic: high transmissibility and high covertness, and a high proportion of undetected cases, including asymptomatic and mildly symptomatic cases, and the chances of resurgence in different scenarios. I will next present the epidemic models to estimate the transmission rates in USA and other countries and intervention effects, as well as the prevalence and the total number of infections. I will present methods and analysis results of >500,000 participants of the HowWeFeel project on symptoms and health conditions in US, and discuss the factors associated with who have been tested in US and the factors associated with positive PRC tests/COVID-19 infection. I will provide several takeaways learned from the pandemic and discuss priorities.

Michael I. Jordan, University of California, Berkeley
Towards a Blend of Statistics and Microeconomics

Statistical decisions are often given meaning in the context of other decisions, particularly when there are scarce resources to be shared. Managing such sharing is one of the classical goals of microeconomics, and it is given new relevance in the modern setting of large, human-focused datasets, and in data-analytic contexts such as classifiers and recommendation systems. I'll discuss several recent projects that aim to explore this interface, including the study of exploration-exploitation trade-offs for bandits that compete over a scarce resource, notions of local optimality in nonconvex-nonconcave minimax optimization and how such notions relate to stochastic gradient methods, the use of Langevin-based algorithms for Thompson sampling, and multi-agent learning based on online gradient descent.

Josh Chen, Global Biostatistical Sciences, Sanofi Pasteur
Use of Real World Healthcare Data to Accelerate Vaccine Development in the Post COVID Era

Human vaccine research and development is a lengthy, risky and expensive process which typically takes 10-15 years from discovery to approval. Lessons learned from the current collaborative efforts to develop safe and effective COVID-19 vaccines within 12-18 months support the aspiration that it is possible to accelerate vaccine development using innovative approaches. Before the COVID pandemic, there had been strong interest in the potential use of real-world evidence for regulatory purposes. The COVID pandemic will further catalyzes digital transformation and advancement of information technology infrastructure and as a result, vast increase in high quality real world data pertaining to patient health and healthcare delivery. In this talk, we will advocate use of real world data from healthcare systems, including electronic health records (EHRs), medical claims and billing data, and patient registries, to generate fit-for-purpose real world evidence in support of the safety and effectiveness of an experimental vaccine for regulatory decisions.

Employment Opportunities around the world

Canada: Mississauga, ON

University of Toronto Mississauga

Assistant Professor, Teaching Stream

https://jobs.imstat.org/job//54873573

China: Shenzhen

School of Data Science, The Chinese University of Hong Kong, Shenzhen

Multiple Tenured/Tenure-track/Teaching-track Faculty Positions at SDS of The Chinese University of Hong Kong, Shenzhen

https://jobs.imstat.org/job//54780013

Germany: Berlin

Weierstrass Institute for Applied Analysis and Stochastics (WIAS)

Head of a research group on Data-driven Control and Optimization (ref. 20/21)

https://jobs.imstat.org/job//55022682

Italy: Milan

Bocconi University, Department of Decision Sciences

Assistant Professor in Statistics

https://jobs.imstat.org/job//55157210

Saudi Arabia: Thuwal-Jeddah

King Abdullah University of Science and Technology

Faculty

https://jobs.imstat.org/job//54847590

Singapore

Singapore University of Technology and Design

Tenure track/ tenured faculty & Lecturer

https://jobs.imstat.org/job//54872221

South Korea

Underwood International College, Yonsei University

Non-Tenure Track Teaching Position

https://jobs.imstat.org/job//54770827

Taiwan: Taipei City

Institute of Statistical Science, Academia Sinica, Taiwan

Tenure-Track Faculty Positions

https://jobs.imstat.org/job//54387703

UK: London

London School of Economics, Department of Statistics

Professor/Associate Professor in Data Science

https://jobs.imstat.org/job//54864258

UK: London

London School of Economics

Assistant Professor in Statistics

https://jobs.imstat.org/job//54901513

United States: Berkeley, CA

University of California, Berkeley Department of Statistics

Neyman Visiting Assistant Professor

https://jobs.imstat.org/job//54822523

United States: Berkeley, CA

University of California Berkeley

Morrey Visiting Assistant Professor - Mathematics

https://jobs.imstat.org/job//54857287

United States: Thousand Oaks, CA

Amgen Inc

Postdoctoral Fellow - Mathematical and Computational Genomics

https://jobs.imstat.org/job//54902167

United States: Los Angeles, CA

University of California Los Angeles

Assistant Adjunct Professorships 2021-22

https://jobs.imstat.org/job//54985877

United States: Los Angeles, CA

University of California Los Angeles

HEDRICK Assistant Adjunct Professor 2021–22

https://jobs.imstat.org/job//54985871

United States: Los Angeles, CA

University of California Los Angeles

Tenure-track assistant professor position in Mathematics 2020-2021

https://jobs.imstat.org/job//54985860

More Employment Opportunities…

United States: Los Angeles, CA
University of Southern California
Professor of Data Sciences and Operations – Statistics (Open Rank, Tenure-Track)
https://jobs.imstat.org/job//55149655

United States: Irvine, CA
University of California Irvine,
Department of Epidemiology and Biostatistics
https://jobs.imstat.org/job//54933472

United States: Berkeley, CA
University of California, Berkeley, Department of Statistics
Department of Statistics, UC Berkeley
https://jobs.imstat.org/job//54585713

United States: Fort Collins, CO
Colorado State University, Department of Statistics
Assistant/Associate and Assistant Professor
https://jobs.imstat.org/job//54958300

United States: New Haven, CT
Yale University, School of Public Health
Assistant/Associate or Professor of Biostatistics (Investigator Track)
https://jobs.imstat.org/job//54794952

United States: New Haven, CT
Yale University, Department of Statistics and Data Science
Assistant, Associate, and Full Professor
https://jobs.imstat.org/job//54968605

United States: Atlanta, GA
Georgia Institute of Technology
Tenure-Track Faculty
https://jobs.imstat.org/job//54741746

United States: Chicago, IL
University of Chicago
Assistant Professor, Associate Professor or Professor, Data Science
https://jobs.imstat.org/job//54978591

United States: Chicago, IL
University of Chicago
William H. Kruskal Instructor, Statistics
https://jobs.imstat.org/job//54994854

United States: Bloomington, IN
IU School of Public Health
Associate Dean for Research and Tenured Full Professor
https://jobs.imstat.org/job//54923412

United States: Bloomington, IN
IU School of Public Health
Dept. of EOH Assistant, Associate, or Full Professor
https://jobs.imstat.org/job//54985791

United States: Boston, MA
Boston University
Associate Professor of the Practice
https://jobs.imstat.org/job//54923922

United States: Boston, MA
Boston University Questrom School of Business
Assistant Professor of Finance (FinTech)
https://jobs.imstat.org/job//55149526

United States: Detroit, MI
Wayne State University, Department of Mathematics
Assistant Professor
https://jobs.imstat.org/job//54907806

United States: Ithaca, NY
Cornell University
Chair and Professor of the Department of Statistics and Data Science
[*see full page ad, right*]
https://jobs.imstat.org/job//54907353

United States: Ithaca, NY
Cornell University
Tenure-Track Faculty Position
https://jobs.imstat.org/job//54968467

United States: New York, NY

Simons Foundation

Research Scientist / Data Scientist, Open Rank, CCM

https://jobs.imstat.org/job//54822055

United States: Ithaca, NY

Cornell University, Department of Statistics and Data Science

Assistant/Associate/Visiting Professor

https://jobs.imstat.org/job//55083713

United States: New York, NY

Simons Foundation

Flatiron Research Fellow in Scientific Computing, CCM

https://jobs.imstat.org/job//54848450

United States: New York, NY

Simons Foundation

Flatiron Research Fellow, Machine Learning and Computational Statistics, CCM

https://jobs.imstat.org/job//54848441

United States: New York, NY

New York University Stern School of Business, Department of Technology, Operations, and Statistics

Assistant Professor of Technology, Operations, and Statistics

https://jobs.imstat.org/job//55123735

United States: University Park, PA

Pennsylvania State University

Assistant Professor of Marketing

https://jobs.imstat.org/job//54763785

United States: San Marcos, TX

Department of Mathematics at Texas State University

Assistant Professor

https://jobs.imstat.org/job//54883311

United States: Ithaca, NY

Tenure-Track Faculty Position
Cornell University, Ithaca campus

Cornell University's School of Operations Research and Information Engineering (ORIE) seeks to fill a tenure-track faculty position for its Ithaca campus. Although priority will be given to junior candidates, candidates at all levels will be considered. We welcome strong applicants at the interface of operations research and data science, especially those with a focus on supply chain, revenue management, and pricing.

Requisite is a strong interest in the broad mission of the School, exceptional potential for leadership in research and education, an ability and willingness to teach at all levels of the program, and a Ph.D. in operations research, mathematics, statistics, or a related field by the start of the appointment. Salary will be appropriate to qualifications and engineering school norms.

Cornell ORIE is a diverse group of high-quality researchers and educators interested in probability, optimization, statistics, machine learning, simulation, game theory, and a wide array of applications such as health care, e-commerce, supply chains, scheduling, manufacturing, transportation systems, financial engineering, service systems and network science. We value mathematical and technical depth and innovation, and experience with applications and practice. Ideal candidates will have correspondingly broad training and interests.

A complete application should include a cover letter, CV, statements of teaching and research interests, statement of diversity, equity, and inclusion, sample publications, at least three reference letters, and, for junior applicants, a Doctoral transcript. Applications for the position should be submitted on AJO at **https://academicjobsonline.org/ajo/jobs/17076**. Applications completed by November 13, 2020 will receive full consideration, although we urge candidates to submit the required material as soon as possible. Applications will be accepted until the position is filled.

ORIE and the College of Engineering at Cornell embrace diversity and seek candidates who can contribute to a welcoming climate for students of all races and genders. Cornell University seeks to meet the needs of dual career couples, has a Dual Career program, and is a member of the Upstate New York Higher Education Recruitment Consortium to assist with dual career searches. Visit **www.unyherc.org/home** to see positions available in higher education in the upstate New York area.

Diversity and Inclusion are a part of Cornell University's heritage. We are a recognized employer and educator valuing AA/EEO, Protected Veterans and Individuals with Disabilities. We also recognize a lawful preference in employment practices for Native Americans living on or near Indian reservations.

Chair and Professor of the Department of Statistics and Data Science
9-month, tenure-track, Cornell University, Ithaca, New York

Cornell University invites nominations and applications for the position of Professor and Chair of the Department of Statistics and Data Science (**stat.cornell.edu**). The department has a strong tradition of theoretical and interdisciplinary research and teaching that takes advantage of Cornell University's extensive and diverse academic community. The Department itself is an interdisciplinary partnership that includes the College of Agriculture and Life Sciences (CALS), the Faculty of Computing and Information Science (CIS), and the School of Industrial and Labor Relations (ILR). Specializations in the department include Statistical Science, Social Statistics, and Biometry and Statistics, with focal points ranging from mathematical statistics, computational statistics and machine learning to the development of statistical methods for astrophysics, ecology, economics, epidemiology, financial modeling, genomics, high dimensional data, neurobiology, legal studies, medicine, public health and risk management.

The tenure-track position will be hired at the rank of Full Professor, with the faculty line hosted in CALS. At Cornell University, all professorial faculty must stand for a formal tenure review, which may begin prior to arrival. In addition, the initial administrative term as chair is expected to be 5 years. Applicants should have an internationally recognized research program in one or more of the following areas: statistical methodology, statistical theory or data science. Candidates should be able to demonstrate a commitment to undergraduate and graduate education, leadership experience, a creative vision for future directions of statistics and data science as an academic discipline and a commitment to diversity and collaboration. The chair reports to the lead Dean (CIS) who consults as needed with the CALS and ILR deans and is responsible for the department's administrative, budgetary, and personnel matters. Successful candidates must demonstrate a vision for supporting, directing, and enhancing the goals of the Department. The successful candidate will also have a record of leadership, active participation in academic affairs, commitment to diversity and inclusion and evidence of excellence in research, teaching, and outreach. A Ph.D. in statistics, biostatistics or related field is required.

Statistics and Data Science has 18 tenured and tenure-track professors, 4 lecturers, 36 Ph.D. graduate students, 58 MPS graduate students and over 180 undergraduates. Additional junior faculty hiring is expected. The department is integral to several of Cornell University's Radical Collaborative Initiatives including Data Science, Sustainability and Social Sciences. Opportunities exist for a strategic leader to integrate departmental activities with broader university programs and the profession by substantially growing the department's visibility and stature.

The College of Agriculture and Life Sciences is a pioneer of purpose-driven science and home to Cornell University's second largest population of students, faculty and staff. We work across disciplines to tackle the challenges of our time through world-renowned research, education and outreach. The questions we probe and the answers we seek focus on three overlapping concerns: natural and human systems; food, energy and environmental resources; and social, physical and economic well-being.

Computing and Information Science (CIS) is a college-level unit founded in recognition that computing is an essential tool in almost every scientific and scholarly discipline. It is a community of people committed to tackling some of the world's biggest challenges by working together across multiple colleges and two Cornell campuses. CIS is home to the three academic departments that power the information economy: Computer Science, Information Science and Statistics and Data Science. It is known for bold new ideas expressed in high-impact research and scholarship, inspiring educational contributions, and entrepreneurial and commercial engagement. The synergies among faculty, researchers and students make CIS more than the sum of its parts.

Cornell University is located in Ithaca, New York, a city of about 35,000 people in the heart of the Finger Lakes region. Both Cornell University and the City of Ithaca offer a wide range of cultural and outdoor activities, with the pleasures of both city and country close at hand. Ithaca is Gorges!

Confidential review of applications will begin immediately and continue until the position is filled. For consideration, a curriculum vitae, letter of interest, statement of career goals and research interest, and leadership goals, and a **statement of diversity, equity, and inclusion** should be submitted. Evaluation of applicants will begin November 30, 2020 and continue until the position is filled. Contact information for references is requested, but will only be used, with permission, from finalists.

Nominations, inquiries, and expressions of interest should be submitted confidentially to the search committee chairs, James Booth **jim.booth@cornell.edu** or Patrick Sullivan **pjs31@cornell.edu.** Interested applicants should apply at **https://academicjobsonline.org/ajo/jobs/16158**.

Cornell University is a place where intercultural skills are developed and used everywhere: throughout our diverse campus groups, with our community partners, within our classrooms and in our workplaces. At Cornell, we recognize people with diverse backgrounds and experiences bring great value to education, discovery, creativity, and engagement which is reflected in our long history of diversity and inclusion.

Cornell understands the needs of dual career couples, which it attempts to meet through a Dual Career program and membership in the Upstate New York Higher Education Recruitment Consortium, which assists dual career searches. Visit HERC - Higher Education Recruitment Consortium **https://www.hercjobs.org/** to see positions available in higher education in the upstate New York area. Cornell and Ithaca are family-friendly communities: Cornell offers a rich array of services, programs and benefits to help employees advance in their career and enhance the quality of personal life, including employee wellness, workshops, childcare and adoption assistance, parental leave and flexible work options. For more details, visit: **Family Life Resources for Faculty** at**: https://hr.cornell.edu/sites/default/files/documents/family_resources_faculty.pdf**.

Employment Assistance: If you require an accommodation for a disability in order to complete an employment application or to participate in the recruiting process, you are encouraged to contact Cornell University's Department of Inclusion and Workforce Diversity at voice (607) 255-3976, fax (607) 255-7481, or email at **owdi@cornell.edu**. For general questions about the position or the application process, please contact the Recruiter listed in the job posting. Applicants that do not have internet access are encouraged to visit your local library, or local Department of Labor. You may also visit the office of Workforce Recruitment and Retention Monday - Friday between the hours of 8:30 a.m. – 4:30 p.m. to use a dedicated workstation to complete an online application. **Notice to Applicants:** Please read the required Notice to Applicants statement by visiting **https://hr.cornell.edu/important-notice-applicants**. This notice contains important information about applying for a position at Cornell as well as some of your rights and responsibilities as an applicant.

Diversity and Inclusion are a part of Cornell University's heritage. We are a recognized employer and educator valuing AA/EEO, Protected Veterans and Individuals with Disabilities. We also recognize a lawful preference in employment practices for Native Americans living on or near Indian reservations. Cornell University is an innovative Ivy League university and a great place to work. Our inclusive community of scholars, students, and staff impart an uncommon sense of larger purpose, and contribute creative ideas to further the university's mission of teaching, discovery, and engagement.

More Employment Opportunities…

United States: College Station, TX

Texas A&M University, Department of Statistics
Multiple Tenure-Track Positions
https://jobs.imstat.org/job//54968665

United States: Fairfax, VA

George Mason University, Department of Statistics
Tenure Track Faculty
https://jobs.imstat.org/job//54958733

United States: Fairfax, VA

George Mason University
Biostatistics Faculty
https://jobs.imstat.org/job//55022968

Are you organizing a meeting?

Get the information out there…

Meetings announcements will be placed on the web site and in the *IMS Bulletin* calendar. Please submit announcements at www.imstat.org/submit-meeting.html. There is no charge for this service. Meeting listings are updated on the web site daily, and will be included in the next available printed *IMS Bulletin*.

…at the earliest opportunity

As soon as the meeting name, dates, location and web page are set for the meeting, submit this information at www.imstat.org/submit-meeting.html. We will place it immediately into the web (imstat.org/meetings-calendar/) and *Bulletin* calendars. This will help people put it on their radar screen. The sooner, the better for this: we can place this information months or even years in advance. You can always ad information later.

Print Advertisements

IMS publishes meeting advertisements as a service to its members and the statistical community. There is no charge to run a meeting advertisement. All advertisements are subject to editorial approval, and may be edited for length.

Advertisements should be limited to 200 words (roughly a third of a page, in the *Bulletin*). Meetings that are not IMS sponsored/co-sponsored are limited to one advertisement, though the meeting will remain in our Calendar until it happens. IMS sponsored and co-sponsored meetings are not limited in the number of advertisements: these can (and should) be re-written as new information becomes available, to keep them fresh.

Advertisements should be submitted at least 6–9 months prior to the meeting. Special consideration should be given to your deadlines (such as abstract submission, registration) when placing advertisements. **You want to ensure people have a chance to see the ad in time to make your deadlines.**

Mailing dates for the *Bulletin* can be found inside the back cover. Most members will receive the Bulletin by three to four weeks after the mail date, and it is available free online roughly two weeks before.

What to include in your advert

Your meeting ad should include:

- Meeting name, dates and location
- Meeting web address
- Important deadlines (abstract submission, registration)
- Titles of plenary sessions and speakers
- Other items to entice attendees. This may vary from meeting to meeting (locations, speakers, etc).
- If you have a print quality image (logo/location), you can include this.

Overall the goal of the ad is grab readers' attention; they then should be directed to the web site to get more information and register. Advertisements don't need to include general items that can be found on the web site, like registration forms, local information, abstracts and so on.

International Calendar of Statistical Events

IMS meetings are highlighted in maroon with the ims logo, and new or updated entries have the NEW or UPDATED 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 POSTPONED or canceled. Where new dates are known, they are included here. Some meetings, marked ONLINE, are offering a virtual format. Please check meeting websites for updates.

Online and Ongoing

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

ONLINE ims **One World Probability Seminar**
w https://www.owprobability.org/one-world-probability-seminar

ONLINE ims **Video series:** *The Philosophy of Data Science*
w https://www.podofasclepius.com/philosophy-of-data-science

December 2020

ONLINE December 7–11: **76th Annual Deming Conference on Applied Statistics** **w** https://demingconference.org

ONLINE December 7–11: **SanDAL Winter School for PhD students & Postdocs** **w** https://sandal.uni.lu/winter-school/

ONLINE December 13–16: **ICSA 2020 Applied Statistics Symposium** **w** https://symposium2020.icsa.org/

December 15–17: Manipal, India. **28th International Workshop on Matrices and Statistics (IWMS 2020)** **w** https://carams.in/events/international-workshop-on-matrices-and-statistics/

January 2021

January 4–5: Tokyo, Japan. **3rd International Conference on Computational Mathematics and Applied Physics (ICCMAP 2021)** **w** http://www.iccmap.iisrc.org

POSTPONED ims ~~January 5–8~~ [NOW January 2022]: Melbourne, Australia. **IMS Asia Pacific Rim Meeting (IMS-APRM2021)** **w** http://ims-aprm2021.com/

March 2021

ims March 14–17: [*Currently in-person, may move to online, please check*] Baltimore, MD, USA. **ENAR Spring Meeting**
w https://www.enar.org/meetings/spring2021/

NEW ims March 17–20: Bethlehem, PA, USA. **Seminar on Stochastic Processes (SSP)** **w** https://wordpress.lehigh.edu/ssp2021/

April 2021

ims April 12–13: Svalbard, Norway [also mirror meetings in Brisbane, Coventry, Paris]. **ABC in Svalbard**
w https://sites.google.com/view/abcinsvalbard/home

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

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

May 2021

ims May 16–18: Las Vegas, USA. **Frontier Probability Days**
w http://lechen.faculty.unlv.edu/FPD20/

June 2021

ims June (dates TBA): Anchorage, Alaska, USA. **WNAR/IMS/JR Meeting** **w** https://www.wnar.org/page-18098

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

ims June 2–4: Berkeley, CA, USA. **Statistics in the Big Data Era**
w https://simons.berkeley.edu/workshops/statistics-big-data-era

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

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

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

NEW ims July 19–23 (postponed from 2020): Seoul, South Korea. **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/

ims August 7–12: Seattle, WA, USA. **IMS Annual Meeting at JSM 2021** **w** http://www.amstat.org/ASA/Meetings/Joint-Statistical-Meetings.aspx

September 2021

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

January 2022

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

March 2022

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

Continues on **page 26**

International Calendar *continued*

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 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

August 2022

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

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

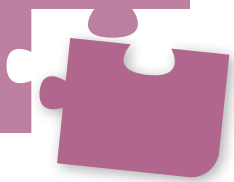
August 2025

 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 erg@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/



Membership and Subscription Information

Journals

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 2020 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 2020 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.

The *IMS Bulletin* (ISSN 1544-1881) is published eight times per year, in January/February, March, April/May, June/July, August, September, October/November and December, by the Institute of Mathematical Statistics, 3163 Somerset Dr, Cleveland, Ohio 44122, USA. Periodicals postage paid at Cleveland, Ohio, and at additional mailing offices. Postmaster: Send address changes to 3163 Somerset Dr, Shaker Heights, OH 44122 USA or dues.subs@imstat.org. Printed by The Sheridan Press, 450 Fame Avenue, Hanover, PA 17331, USA.

Information for Advertisers

General information: The *IMS Bulletin* and webpages are the official news organs of the Institute of Mathematical Statistics. The *IMS Bulletin*, established in 1972, is published 8 times per year. Print circulation is around 3,500 paper copies, and it is also free online in PDF format at https://www.imstat.org/ims-bulletin-archive/, posted online about two weeks before mailout (average downloads over 8,000). Subscription to the *IMS Bulletin* costs $115: call 877-557-4674 (US toll-free) or +1 216 295 2340 (international), or email dues.subs@imstat.org. The IMS website, https://imstat.org, established in 1996, receives over 30,000 visits per month.

Advertising job vacancies

A single 60-day online job posting costs just $325.00. 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

Advertising meetings, workshops and conferences

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/

Rates and requirements for display advertising

Display advertising allows for placement of camera-ready ads for journals, books, software, etc. A camera-ready ad should be sent as a grayscale PDF/EPS (min. 300dpi) with all fonts embedded. Email your advert to Audrey Weiss, IMS Advertising Coordinator admin@imstat.org or see https://imstat.org/advertise

	Dimensions: width x height	Rate
⅓ page	4.9" wide x 4" high (125 x 102 mm)	$285
½ page	7.5" wide x 4" high (190 x 102 mm)	$355
⅔ page	4.9" wide x 8" high (125 x 203 mm)	$415
Full page (to edge, including ⅛" bleed)	8.75" wide x 11.25" high (222 mm x 286 mm)	$480
Full page (within usual *Bulletin* margins)	7.5" wide x 9.42" high (190 mm x 239 mm)	$480

Deadlines and Mail Dates for *IMS Bulletin*

Issue	Deadline	Online by	Mailed
1: January/February	**December 1**	December 15	January 1
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 January/ February 2021

Read IMS Bulletin articles online at https://imstat.org/news

DEADLINES for submissions

December 1, then **February 1**

Please see inside the back cover for subscription details and information for advertisers, including all our deadlines and requirements

Journal alerts

For email alerts when new IMS journal issues are released, sign up at **https://imstat.org/portal/login**

The purpose of the Institute is to foster the development and dissemination of the theory and applications of statistics and probability

IMS: Organized September 12, 1935