Volume 48 • Issue 4

IMS Bulletin

June/July 2019

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Carver Award: Jean Opsomer

Jean Opsomer

The Carver Medal Committee of the Institute of Mathematical Statistics has selected Jean Opsomer to receive the 2019 Harry C. Carver Medal. The award is made in recognition of his outstanding contributions to IMS, especially through his steady service and guidance as two-term Treasurer of the IMS that put IMS finances on a healthy and stable path.

Jean Opsomer is a Vice President of Westat. Prior to this, he was a professor and chair of the Department of Statistics at Colorado State University, which he joined in 2007. Previously, Jean spent 12 years at Iowa State University as a faculty member in the Department of Statistics, affiliated with the Center for Survey Statistics and Methodology. He has a Master's in Management Engineering from KU Leuven, Belgium, an MBA in Finance from the University of Chicago, and a PhD (1995) in Operations Research from Cornell University.

The author or coauthor of 65 peer-reviewed articles, Jean has introduced a number of influential novel statistical methodologies into survey estimation. His methodological and theoretical work is frequently motivated by questions that arise within federal statistical agencies with which he has long-term collaborations. His recent research has focused on the introduction of shape-constrained and nonparametric methods in survey estimation and on several interdisciplinary projects with survey components on a range of topics (higher education, public health, nutrition, employment, fisheries management, methane emissions, forest health, and agricultural erosion).

Jean is a Fellow of the IMS and the American Statistical Association, and an Elected Member of the International Statistical Institute. In recognition of his contributions to the field, he was named a Westat Senior Statistical Fellow and serves on their Statistical Fellows Committee, which provides consultation on important survey statistics issues and addresses recent advances in applied statistics.

The Carver Medal was created by the IMS in honor of Harry C. Carver, Founding Editor of the *Annals of Mathematical Statistics* and one of the founders of the IMS. The medal is for exceptional service specifically to the IMS. It will be presented to Jean Opsomer at the IMS Presidential Address and Awards session at JSM Denver (Monday, July 29). Also presented at that session are the **IMS Fellows** (see page 8), the **New Researcher Travel Awards** (page 5), the **Hannan Travel Awards** (page 16) and, of course, the Presidential Address (see page 10 for Xiao-Li Meng's latest **President's Column**). If you're coming to JSM this year, please join us for the session, and the reception that follows it!

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Executive Committee

IMS Members' News

Kathryn Roeder elected to US National Academy of Sciences

IMS Fellow Kathryn Roeder has been elected a member of the US National Academy of Sciences in recognition of her distinguished and continuing achievements in original research. NAS membership is a widely accepted mark of excellence in science and is considered one of the highest honors that a scientist can receive.


CMU Statistics
Kathryn Roeder

Kathryn Roeder is Professor of Statistics and Computational Biology, and Vice Provost for Faculty, at Carnegie Mellon University (CMU). She earned her PhD in statistics in 1988 at Pennsylvania State University (her dissertation, supervised by Bruce G. Lindsay, was *Method of Spacings for Semiparametric Inference*), then she worked at Yale University for the next six years before moving to CMU in 1994. In 1997 she received both the COPSS Presidents' Award and the Snedecor Award, and, in 1999, gave an IMS Medallion Lecture. In 2013, she received the Janet L. Norwood Award for outstanding achievement by a woman in statistical sciences. She said she joined CMU's Computational Biology Department as a voting faculty member in 2004, "to encourage a bridge between statistics, machine learning, genetics and genomics." She is a fellow of the American Statistical Association as well as IMS.

She lists her research interests on her website: "A primary goal of my research group is to develop statistical tools for finding associations between patterns of genetic variation and complex disease. To solve biologically relevant problems, we utilize modern statistical methods such as high dimensional statistics, statistical machine learning, nonparametric methods and networks. Data arises from primarily from Next Generation Sequencing and gene expression arrays. Our methodological work is motivated by our studies of schizophrenia, autism and other genetic disorders." See http://www.stat.cmu.edu/~roeder/index.html

New ASA Fellows announced

The American Statistical Association has announced its class of 2019 Fellows. Among the 59 distinguished colleagues elected this year for their professional contributions, leadership, and commitment to statistical science, 23 are IMS members, of whom seven are also IMS Fellows. Congratulations to: Gerda Claeskens, Keith Crank, Michael Fay, Michele Guindani, Sebastien Haneuse, Hongkai Ji, Jiashun Jin, Katerina Kechris, Charles Kooperberg, Eric Laber, Bo Li, Jia Li, Yehua Li, Samuel Mueller, Davy Paindaveine, Judea Pearl, Igor Pruenster, Cynthia Rudin, David Stephens, Pei Wang, William Welch, Xiangrong Yin and Hui Zou. The full list is at https://www.amstat.org/asa/files/pdfs/2019-ASAFellowAnnouncement.pdf

Watch video interview with Eric Laber

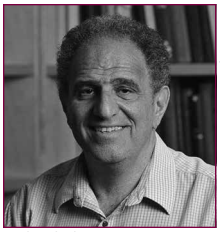
IMS member Eric Laber, Associate Professor at NCSU and Director of Laber Labs, features in an online video interview with the ASA's Donna Lalonde and Lara Harmon, as part of April's **Mathematics and Statistics Awareness Month** (http://www.ams.org/mathstatmonth/msamhome). Watch the video at https://www.youtube.com/watch?v=BjthGoB_Ctg&t=4s.


ASA
Eric Laber, talking about his career so far

More Members' News

Robert Tibshirani elected Fellow of UK Royal Society

Professor Robert Tibshirani is among the 51 eminent scientists who have become Fellows of the Royal Society, for their exceptional contributions to science. Rob Tibshirani is Professor of Biomedical Data Science and of Statistics, in the Departments of Biomedical Data Science and Statistics at Stanford University.


Rod Searcey

Rob Tibshirani

Robert Tibshirani has made important contributions to the statistical analysis of complex datasets. Some of his best-known contributions are the lasso, which uses L_1 penalization in regression and related problems, generalized additive models and Significance Analysis of Microarrays (SAM). He also co-authored four widely used books: *Generalized Additive Models*, *An Introduction to the Bootstrap*, *The Elements of Statistical Learning*, and *Sparsity in Statistics: the Lasso and its generalizations*.

Professor Tibshirani co-authored the first study that linked cell phone usage with car accidents, a widely cited article that has played a role in the introduction of legislation that restricts the use of phones while driving. He is one of the most widely cited authors in the mathematical sciences field.

Robert Tibshirani trained at the University of Waterloo, University of Toronto, and Stanford University. He was elected to the US National Academy of Sciences in 2012.

Klaus Krickeberg honored in Vietnam

On the 16th of July 2018 the President of Vietnam awarded IMS Fellow Klaus Krickeberg the Friend of Vietnam Medal for "positive essential contributions to the development of the Vietnamese health sector."

Klaus Krickeberg accepting his award

Klaus has worked in Vietnam since the 1980s in the research, teaching and practice of Public Health. He explained how his work uses probability theory and mathematical statistics: "Clinical trials to evaluate the action of medical treatments in populations are based on statistical models. The same is true for estimating the efficacy of preventive measures, for example vaccinations. Statistical models also allow the analysis of risk factors for non-infectious diseases like obesity, diabetes, various degenerative ailments and most forms of cancer. Smoking and alcohol are 'classical' risk factors; now environmental and nutritional factors and lack of physical exercise are the center of attention. The stochastic methods for dealing with infectious diseases are very different: they rest on stochastic modeling of the evolution of a disease, for example of a measles epidemic, in a given population. With its help we can estimate the smallest coverage by a vaccination of known efficacy that will lead to extinction of the disease. Nowadays planning a vaccination campaign is mainly an affair of stochastic modeling. Few people in the health sciences are aware of this particular aspect of this dichotomy, infectious disease versus non-infectious disease. It has important implications in organizing measures to control their evolution."

COPSS Awards at JSM

COPSS Snedecor, Fisher and David Awards announced

The Committee of Presidents of Statistical Societies (COPSS) sponsors and presents the following awards at JSM Denver this year. The 2019 **George W. Snedecor Award** will be given to Sudipto Banerjee, University of California, Los Angeles, for groundbreaking and fundamental work on Bayesian hierarchical modeling and the analysis of large spatial datasets; for significant contributions to the mapping of disease incidence in space and time, and the analysis of environmental exposures. The Snedecor Award, established in 1976 and given biennially (odd years) since 1991, honors an individual who was instrumental in the development of statistical theory in biometry. The award is for a noteworthy publication in biometry in the past three years.


Sudipto Banerjee

The **2019 Fisher Lecture** will be delivered at JSM by Paul R. Rosenbaum, University of Pennsylvania. Paul was selected for his pioneering contributions to statistical methodology for observational studies, important applications of such methodology to health outcomes studies, lucid books on statistical principles and methodology for observational studies and excellent mentoring. The lecture is titled, *"An Observational Study Used to Illustrate Methodology for Such Studies."* Paul R. Rosenbaum is the Robert G. Putzel Professor in the Department of Statistics at the Wharton School of the University of Pennsylvania. He is the author of three books, *Observational Studies* (Springer 1995, 2002), *Design of Observational Studies* (Springer 2010), and *Observation and Experiment: An Introduction to Causal Inference* (Harvard University Press 2017). He received his BA in Statistics from Hampshire College and his AM and PhD in statistics from Harvard University. Before joining the Wharton School in 1986, he worked at the US Environmental Protection Agency, the University of Wisconsin at Madison, and the Educational Testing Service. The R.A. Fisher Lectureship honors both the contributions of Sir Ronald Aylmer Fisher and the work of a present-day statistician for their advancement of statistical theory and applications.


Paul Rosenbaum

The **2019 Florence N. David Award** will be presented to Susan S. Ellenberg, University of Pennsylvania, for her impactful leadership roles at the NIH, FDA and the University of Pennsylvania, developing and evaluating new methodologies and specialized approaches to improve the conduct of clinical trials; for influencing ethical practice and leading development of important regulatory policies; for leadership in setting standards for clinical trial data monitoring committees; for senior statistical leadership for many multicenter clinical research network clinical trials; for distinguished leadership in numerous professional societies and national and international committees addressing major public health challenges; and for serving as an exceptional academic role model for faculty and students. Susan Ellenberg will deliver the **F.N. David Lecture** at JSM in Denver on the Tuesday afternoon: *"The Evolution of The Randomized Clinical Trial."*

The COPSS Presidents' Award is given annually to a young member of the statistical community in recognition of outstanding contributions to the profession of statistics. The award is announced and presented at the Joint Statistical Meetings.

IMS HIGHLIGHTS AT JSM

Among the highlights in the IMS program at the Joint Statistical Meetings:

IMS Presidential Address and Awards Ceremony: Monday, July 29, 8:00 pm
Xiao-Li Meng: *011, 010111, and 011111100100*

Wald Lectures: Mon, July 29, 10:30 am; Tues, July 30, 2:00 pm; Weds, July 31, 10:30 am
Trevor J. Hastie: *Statistical Learning with Sparsity*

Rietz Lecture: Tuesday, July 30, 10:30 am
Yoav Benjamini: *Selective Inference: The Silent Killer of Replicability*

Medallion Lecture I: Sunday, July 28, 4:00 pm
Yee Whye Teh: *On Statistical Thinking in Deep Learning*

Medallion Lecture II: Mon, July 29, 8:30 am
David Dunson: *Learning and Exploiting Low-Dimensional Structure in High-Dimensional Data*

Medallion Lecture III: Mon, July 29, 2:00 pm
Helen Zhang: *Breaking Curse of Dimensionality in Nonparametrics*

Medallion Lecture IV: Weds, July 31, 8:30 am
Elizaveta (Liza) Levina: *Hierarchical Communities in Networks: Theory and Practice*

More IMS members giving keynote lectures:

Deming Lecture: Tuesday, July 30, 4:00 pm
Nicholas Fisher: *Walking with Giants: A Research Odyssey*

ASA President's Address and Awards: Tuesday, July 30, 8:00 pm
Karen Kafadar

Free Public Lecture, Sunday, July 28, 6–7 pm
Mark Glickman: *Data Tripper: Distinguishing Authorship of Beatles Songs through Data Science*

Preview: Medallion lecturer, Étienne Pardoux

Étienne Pardoux received his PhD in 1975 from the Université Paris-Sud Orsay, under the joint supervision of Alain Bensoussan and Roger Temam. He held a position at CNRS, before joining the Université de Provence at Marseille (now Aix Marseille Université) in 1979, where he has worked ever since and, since 2017, is professor emeritus. Étienne's research interests include stochastic partial differential equations, nonlinear filtering, anticipating stochastic calculus, backward stochastic differential equations, homogenization of PDEs with periodic and random coefficients, and, more recently, probabilistic models in evolutionary biology and epidemics. He received the Monthyon Prize from the French Academy of Sciences in 1993. Étienne's Medallion Lecture will be delivered at the Stochastic Processes and their Applications (SPA) meeting, 8-12 July 2019, in Evanston, IL, USA: https://sites.math.northwestern.edu/SPA2019/.

Fluctuations around a law of large numbers, and extinction of an endemic disease

We consider epidemic models where there is a constant flux of susceptible individuals, either because the infected individuals, when they recover, don't gain any immunity, or they lose their immunity after some time, or because of demography (birth or immigration of susceptible individuals). Under certain conditions on the parameters, the associated deterministic epidemic model, which is an ODE, has a stable endemic equilibrium. This ODE is a large population law of large numbers limit of a system of stochastic Poisson driven SDEs. The stochastic model has a disease free absorbing state, which by irreducibility, is reached soon or later by the process. It might however be that the time it takes for this to happen, i.e. for the random fluctuations to drive the system out of the basin of attraction of the endemic equilibrium of the deterministic limiting ODE is enormous, and does not give any encouraging information concerning the epidemic.

It is therefore of interest to try to predict the time it takes for the random fluctuations inherent in the model to drive the system to the disease-free absorbing state. This can be done using the central limit theorem, moderate and large deviations. The relevance of each approach will depend upon the size of the population.

Most results are given for a homogeneous model (i.e. where each infectious individual is likely to infect with equal likelihood each susceptible individual in the population). However, there are extensions of those results for a population distributed over space. Another model of interest is the so-called "household model," where there are both local infections in each household, and global infections between households. In that model, the law of large numbers limit is given by a type of "propagation of chaos" result.

This is joint work with R. Forien, P. Kratz, B. Samegni-Kepgnou and T. Yeo.

New Researcher Travel Awards

The 2019 IMS New Researcher Travel Awards are supporting 11 new researchers to attend the following meetings. If you're there, please look out for them and say hello! *Statistics conference in honour of Aad van der Vaart's 60th birthday* (June 17–21, Leiden, The Netherlands): Bo Ning, Yale. *IMS China Meeting* (July 6–10, Dalian): Boxiang Wang, Univ. Iowa, Guannan Wang, College of William and Mary, Yuanyuan Zhang, Univ. Manchester, UK. *International Conference on Computer Age Statistics in the Era of Big and High Dimensional Data* (which was in January): Marcelo Bourguignon Pereira, UF Rio Grande do Norte. *Joint Statistical Meetings* (July 27–August 1, Denver): Abhishek Chakrabortty, Univ. of Pennsylvania, Xinyi Li, UNC Chapel Hill, Quan Zhou, Rice Univ. *O'Bayes* (June 29–July 2, Warwick, UK): Justin Strait, Univ. Georgia. *Stochastic Processes and their Applications* (July 8–12, Evanston): Mikołaj Kasprzak, Univ. Luxembourg. *WNAR/IMS/JR Meeting* (June 23–26, Portland): Lu Mao, University of Wisconsin–Madison.


Abhishek Chakrabortty


Mikołaj Kasprzak

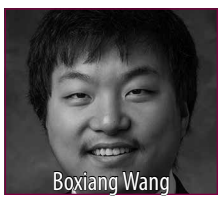

Xinyi Li


Lu Mao


Bo Ning


Marcelo B Pereira


Justin Strait


Boxiang Wang


Guannan Wang


Yuanyuan Zhang


Quan Zhou

Recent papers: supported and affiliated journals

Annales de l'Institut Henri Poincaré (B), Probabilités et Statistiques

The Probability and Statistics section of the *Annales de l'Institut Henri Poincaré* is an international journal that publishes high-quality research papers. The journal, supported by the IMS, deals with all aspects of modern probability theory and mathematical statistics, and their applications. The editors are Grégory Miermont and Christophe Sabot. Access papers at **https://projecteuclid.org/aihp**

Volume 55, Number 1, February 2019

Observational Studies

Observational Studies, an IMS affiliated journal, is an open-access, peer-reviewed journal that publishes manuscripts on all aspects of observational studies, including study protocols for observational studies, methodologies for observational studies, descriptions of data sets for observational studies, software for observational studies and analyses of observational studies. The editor is Dylan Small. Read it at **http://obsstudies.org/index.php**

2018 papers July–December

2019 papers to date

University of Michigan Statistics: 50 Years Old and Growing

The Department of Statistics at the University of Michigan marks its 50th anniversary this September. Its Department Chair, Xuming He, reports: In 1912, James W. Glover, a Professor of Mathematics who specialized in actuarial science, taught the first course devoted entirely to statistical theory at the University of Michigan. In 1930, Harry C. Carver founded the *Annals of Mathematical Statistics* in Ann Arbor. That journal was edited at the University of Michigan until 1938 and has since grown into *Annals of Statistics* and *Annals of Probability*, two flagship journals of IMS. So far, four University of Michigan faculty have served as Editor of *Annals of Statistics*.

In September 1969 the Department of Statistics was officially founded within the College of Literature, Science, and the Arts at the University of Michigan. The original department, established in Mason Hall, consisted of Bill Ericson (the first chair), Chuck Bell, Paul Dwyer, Bruce Hill, Norm Starr, and Michael Woodroofe. Ed Rothman joined shortly thereafter.

For the first few years, the Department awarded only Master's and PhD degrees. It wasn't until the fall of 1977 that the department introduced an undergraduate concentration program in Statistics, replacing the previous option that had been offered through the Department of Mathematics.

Since its foundation, the Department has grown at an exponential rate and has risen to become a leader in statistical education and research in the United States. "Faculty excellence in scholarship is always a hallmark of the department, and education is a core mission for us," said Xuming He, Department Chair and H.C. Carver Professor of Statistics at the University of Michigan. "Our faculty are renowned researchers who are dedicated to their work and strive to provide the best resources and opportunities for our students."

Notable former colleagues include the current IMS President-Elect Susan Murphy, former H.C Carver Professor Chien-Fu Jeff Wu, former ISI President Vijay Nair, and former L.J. Savage Professor Michael Woodroofe. The current faculty include former editors of major statistics journals, including *Annals of Statistics*, *Biometrics*, and *Journal of the American Statistical Association*.

Several junior faculty have joined the department just in the past three years, including Yang Chen (PhD 2018, Harvard), Snidgha Panigrahi (PhD 2019, Stanford), Yukai Sun (PhD 2015, Stanford), Jonathan Terhorst (PhD 2017, Berkeley), Gongjun Xu (PhD 2013, Columbia), and Ziwei Zhu (PhD 2018, Princeton). They have brought with them great talent and expertise in several emerging areas of statistics and data science, such as biosciences, big data computation, and post selection inference. Another internationally renowned statistician, Ya'acov Ritov, joined the faculty in 2016.

"Since I joined the University of Michigan, I have always been inspired by our outstanding faculty, students, and staff," said Professor He, who joined the faculty in 2011. "They love what they are doing and excel in what they do. I am very proud that we are able to attract exceptional talent in statistics and data science to our department, and they will continue to take us to new heights in the data science era."

Today, the Department of Statistics at the University of Michigan offers three undergraduate majors (Statistics, Informatics, and Data Science), two undergraduate minors (Statistics and Applied Statistics), as well as Master's programs in Applied Statistics and Data Science, and a PhD program in Statistics. Currently, the department is host to more than 800 students across those programs. The Michigan alumni have their presence in major companies of the modern age, such as Google and Amazon, and have joined the faculty in top research universities in the country.

On September 20 and 21 of this year, the Department of Statistics will be celebrating its 50th anniversary on campus in Ann Arbor, Michigan. The celebration will feature talks led by former professors and alumni, as well as panel discussions. All in all, it will be an opportunity to reflect and celebrate the continual hard work and progress that has brought the Department of Statistics to the level of excellence it operates on today. "Our department has undergone many changes in the past 50 years" said Professor He. "We are now extremely well-positioned for another 50 years as a premier statistics department in the country."

Visit https://lsa.umich.edu/stats for more information about the department.

What's happening in your department? Write and tell us!

Congratulations to the 2019 IMS Fellows!

Edoardo M. Airoldi

Co-Director, Data Science Institute, and Millard E Gladfelter Professor of Statistics & Data Science, Temple University

For methodological contributions to modeling network data and theoretical contributions to random geometric hypergraphs.

Cristina Butucea

Professor, ENSAE, Institut Polytechnique de Paris

For deep and original contributions to non-parametric statistics, inverse problems, and quantum statistics.

Victor Chernozhukov

International Ford Professor, Department of Economics and Center for Statistics & Data Science, Massachusetts Institute of Technology

For path-breaking contributions to high-dimensional inference.

Jeng-Min Chiou

Distinguished Research Fellow, Academia Sinica

For contributions to methodology for clustering, classification, and prediction with functional data.

Bertrand Salem Clarke

Professor and Chair of the Department of Statistics, University of Nebraska-Lincoln

For contributions to the theoretical justification of reference priors and on aspects of model selection involving Bayesian model averaging.

Michael Cranston

Professor, University of California, Irvine

For contributions to coupling techniques resolving significant open problems for Brownian motion and questions in mathematical physics.

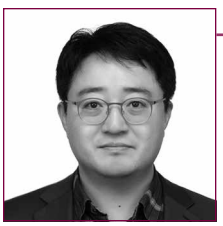
Robert C. Dalang

Professor of Mathematics, École Polytechnique Fédérale de Lausanne: *For pioneering contributions to the study of SPDEs driven by a Gaussian noise which is white in time with a spatially homogeneous covariance.*

Christina Goldschmidt

Professor, University of Oxford

For fundamental contributions to the fields of coalescence and fragmentation theory, and to continuum limits for random trees and graphs.



Yongdai Kim

Professor, Seoul National University, Korea

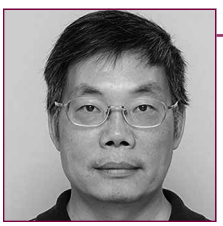
For contributions to nonparametric Bayesian estimation for counting processes and high-dimensional regression.

Alois Kneip

Professor of Statistics, University of Bonn

For fundamental contributions to functional data analysis and nonparametric regression.

Barbara Frommann



Shiqing Ling

Professor, Hong Kong University of Science and Technology

For contributions to the analysis of time series with heteroscedastic and heavy-tailed noise and goodness-of-fit tests for dependent data.

Jinchi Lv

Kenneth King Stonier Chair in Business Administration and Professor of Data Sciences and Operations, and Mathematics, University of Southern California

For contributions to high-dimensional statistics and causal inference.

Elizabeth S. Meckes

Professor of Mathematics

Case Western Reserve University

For contributions to Stein's method and to random matrix theory.

Victor Pătrângenaru

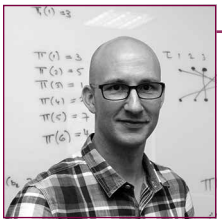
Professor of Statistics, Florida State University

For contributions to non-parametric statistics on manifolds and statistics for computer vision.

Firas Rassoul-Agha

Professor, University of Utah

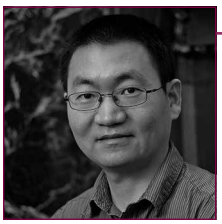
For contributions to central limit theorems and large deviations, random walks in random environments, random polymers, and related percolation models in statistical physics.



Adrian Röllin

Associate Professor, National University of Singapore

For the development of Stein's method for multivariate cases including the unification of coupling under the name of Stein coupling.



Xiaofeng Shao

Professor, University of Illinois, Urbana-Champaign

For contributions to non-parametric statistical inference for multivariate time series, in particular to the asymptotic theory for time series analysis via moments and cumulants.

Christopher K. Wikle

Curators' Distinguished Professor and Chair, Department of Statistics, University of Missouri: *For fundamental contributions to spatio-temporal modeling and Bayesian computation and inference, with influential applications to geophysical, ecological, and socio-demographic areas.*

Xiangrong Yin

Professor of Statistics, University of Kentucky

For seminal work in high-dimensional data analysis and data mining, sufficient dimension reduction, and sufficient variable selection.

Victor M. Panaretos

Professor of Mathematical Statistics, École Polytechnique Fédérale de Lausanne: *For contributions to functional data analysis and stochastic geometry, in particular to estimation of spectral density kernels for stationary time series.*

Debashis Paul

Professor, Department of Statistics,

University of California, Davis

For contributions to non-parametric methods, high-dimensional multivariate analysis and random matrix theory.

Bruno N. Rémillard

Professor, HEC Montréal

For contributions to copula modelling, to tests of independence, goodness of-fit testing, weak convergence tools for such inference, and to quantitative finance.

Cynthia Rudin

Professor of Computer Science, Electrical and Computer Engineering, and Statistical Science, Duke University

For contributions to interpretable machine learning algorithms, prediction in large scale medical databases, and theoretical properties of ranking algorithms.

Yuedong Wang

Professor, University of California, Santa Barbara

For contributions to non-parametric regression and computational statistics, in particular smoothing spline methodology for dependent observations and applications to bioinformatics and biomedical modeling.

Hongquan Xu

Professor and Graduate Vice Chair of Statistics,

University of California, Los Angeles

For contributions to experimental design, computer experiments, and functional data analysis, in particular to nonregular fractional factorial designs and spacefilling designs.

From Statistically Significant… to Significantly Statistical

IMS President Xiao-Li Meng writes another President's Column:


Photo: Martha Stewart

We statisticians have successfully—perhaps too successfully—taught everyone that the larger the size, the higher the power to lend credence to an alternative. This is evident from the 2017 *Nature Human Behaviour*'s "Redefine Statistical Significance," which has over 70 authors, and from the 2019 *Nature*'s "Retire Statistical Significance," with its more than 800 signatories. The statistical community's organized responses regarding the troubled *p*-value have been led most visibly by American Statistical Association (ASA), via the 2016 ASA's Statement on *p*-Values, the 2017 ASA Symposium on A World Beyond $p<0.05$, and the post-symposium special issue in *The American Statistician* (*TAS* 2019), with its 43 articles on what do to in a world in which *p*-value has been de-valued.

Given the increased attention to the issue of replicability, what can IMS contribute to the larger conversation? Inspired by a predecessor, I have a somewhat unusual idea, which requires your thoughtfulness in order to be consummated. So please, read on.

If the number 43 is too large for you (because you have taught many that $n=30$ is a good approximation for $n=\infty$ under normal circumstances), the editorial of *TAS* 2019 by Wasserstein, Schirm, and Lazar is a gentle and humble tour guide. It summarizes the key recommendations by an ATOM: "**A**ccept uncertainty. Be **t**houghtful, **o**pen, and **m**odest." Indeed, the thoughtfulness and modesty of our profession are well-reflected by the very fact that many statisticians endorse the call to abandon the term "statistical significance." I have yet to identify another discipline with quite so many members who endorse the idea of abandoning its publicly most-recognized concept.

To a layperson, saying something is "statistically significant" is analogous to saying it is "mathematically proven" or "scientifically valid." Such colloquial associations are in fact what motivated the call to abandon the term "statistical significance," because the methods behind it are far less rigorous than mathematical proofs, and far too simplistic for establishing scientific validity. Yet we should not overlook the epistemological effectiveness of such confidence-inducing terms in promoting and sustaining the public awareness and appreciation of the societal relevance of a discipline (e.g., mathematics) or a collection of them (e.g., science). As Aristotle reminds us, our expectations of absolute exactitude should be qualified when it comes to matters of human opinion and action.

The question, then, is what alternative statistical concept could conceivably maintain the virtues of "statistical significance" without much of its vice? How about we simply drop the word "significance"? Just as we question if a finding is *scientific*, a study is *ethical*, a project is *economical*, an action is *legal*, or a policy is *moral*, we can—and should—ask of any study, "Is it *statistical?*" While the concepts of being *scientific*, *ethical, economical, legal,* and *moral* are endlessly contested, they have considerable use as yardsticks in both common and specialized parlance. Experts and laypersons alike may ask "Is it X?" with the term "X" signifying what something is or is not. The point is not to lay down incontrovertible definitions but rather to open up questions about what "X" is. Indeed, the lack of such routine questioning would itself be a troubling sign for a society or a historical period.

I dare to suggest that in the light of the dramatically increased societal attention to data science, we should promulgate the use of "statistical" as a yardstick. "Unstatistical" studies can do much harm to our societies in both the short and long term, just as unethical studies or uneconomical projects can. The concept of *being statistical* will not be any more perplexing than any of the concepts mentioned above, and its pithiness will enhance its effectiveness in public discourse and research communications, as well as in private conversations. IMS, as the world's leading learned society in foundational thinking and the building-up of statistics and probability, can play a vital role in framing its core rhetorical components. Indeed, to the best of my knowledge, "Is it statistical?" was first posed by Bernard Silverman, 2000–2001 IMS President (in a private conversation years ago), as a parallel to the question "Is it legal?" or "Is it ethical?"

In the spirit of "casting stones to attract jades" (抛砖引玉 in Chinese), I list below my proposal on the virtues of being statistical, the practice of which should help to reduce the prevalence of irreplicable research findings. I purposefully set the bar high in order to provoke, and hence, I would be happy to praise a study

as being "significantly statistical" if it demonstrates—with due diligence—all of the following virtues, as called for by the purposes and design of the study:

- ☑ Discuss the collection, pre-processing, quality and limitations of the data, and the implications of these;
- ☑ Elucidate, assess, and discuss data analysis and modeling assumptions, as well as their consequences;
- ☑ Investigate and evince a good understanding of selection biases, confounding factors, and when/whether causal conclusions can be drawn;
- ☑ Exhibit coherent probabilistic thinking and treatments of multivariate relationships and distributions;
- ☑ Apply statistical methods with reasonable justifications and acknowledge their shortcomings;
- ☑ Conduct appropriate uncertainty propagation, quantification, and representations;
- ☑ Show good understanding of statistical principles, such as conditioning and the bias–variance trade-off.

A list of virtues can never be exhaustive. There are also other virtues that are critical for data science, but they are not purely or primarily statistical considerations. For example, it is a virtue to understand trade-offs between statistical and computational efficiency, to ensure computational stability and scalability, to consider carefully policy implications, and to describe the essential scientific background, etc.

An invitation to you

My list here is only an invitation for IMS members to contemplate what should be the core considerations of "statistical" or "significantly statistical". I would greatly appreciate hearing from you. Please either comment on the online version (at http://bulletin.imstat.org) or send your thoughts to meng@stat.harvard.edu as I prepare for my IMS Presidential Address at JSM 2019.

Of course, I'd appreciate it most if we all can practice what we preach, by constantly asking ourselves, "Is my study *statistical?*"

Obituary: Kimiko Bowman

1927–2019

Kimiko "Kim" Bowman

Kimiko Osada Bowman, age 91, passed away on January 13, 2019.

Kim immigrated to the USA from her native Japan in 1951. In the course of only five years, she completed an undergraduate degree in mathematics and chemistry at Radford College, and MS and PhD degrees in statistics at Virginia Tech. Many years later, she was also awarded a doctorate in mathematical engineering from Tokyo University. Her close and active collaboration with L.R. Shenton, her PhD advisor at Virginia Tech, focused on the distributional properties of estimators based on non-normal data, and continued for 45 years.

Kim was a member of the scientific staff of Oak Ridge National Laboratory for 50 years, and remained active as a researcher and collaborator with ORNL staff for many years after her retirement in 1994. Kim is fondly remembered by colleagues at ORNL as a tireless, enthusiastic and dedicated researcher. She authored or co-authored three books and more than 200 articles during her career. She was the recipient of many awards, was a fellow of the American Statistical Association and the American Association for the Advancement of Science, and was an elected fellow of the International Statistical Institute and the Institute of Mathematical Statistics. Her remarkable career was featured in "Statisticians in History," a special issue of *Amstat News* (September, 2008).

A victim of polio herself, Kim took an active leadership role in advocacy for individuals with disabilities. She served on the National Science Foundation Equal Opportunities for Science and Engineering Advisory Committee, and chaired the NSF Committee on People with Disabilities. She also chaired the Statistical Tracking of Employment of People with Disabilities Task Force for the President's Committee on Employment of People with Disabilities.

Kim is survived by a son, Robert Noah Bowman and spouse Cheryl, two grandsons, and one great grandson.

Donations in her name can be made to the Kingwood Church, MAPS Honduras Alliance, 100 Harvest Way, Alabaster, AL 35007.

Max Morris, Iowa State University

This obituary first appeared in the International Statistical Institute's online "In Memoriam" section. It is reprinted with permission.

Obituary: Harry Kesten

1931–2019


Photo: Vladas Sidoravicius

Harry Kesten

On March 29, 2019, Harry Kesten lost a decade-long battle with Parkinson's disease. He died in Ithaca, aged 87.

Harry was born in Duisburg, Germany, on November 19, 1931. His parents escaped from the Nazis in 1933 and moved to Amsterdam. After undergraduate studies in Amsterdam, he worked as a research assistant at the Mathematical Center there until 1956, when he came to Cornell. He received his PhD in 1958 at Cornell University under supervision of Mark Kac.

In his 1958 thesis on *Symmetric Random Walks*, he showed that the spectral radius equals the exponential decay rate of the return to 0, and the latter is strictly less than 1 if and only if the group is non-amenable This work has been cited 206 times and is his second most-cited publication (according to MathSciNet). Harry was an instructor at Princeton University for one year and at the Hebrew University for two years before returning to Cornell, where he spent the rest of his career. While in Israel, he and Furstenberg wrote their classic paper on *Products of Random Matrices*.

In the 1960s, he wrote a number of papers that proved sharp or very general results on random walks, branching processes, etc. One of the most famous of these is the 1966 Kesten–Stigum theorem, which shows that a normalized branching process Z_n/μ^n has a non-trival limit if and only if the offspring distribution has $E(X \log^+ X) < \infty$. In 1966 he also proved a conjecture of Erdős and Szuzu about the discrepancy between the number of rotations of a point on the unit circle hitting an interval and its length. Foreshadowing his work in physics, he showed in 1963 that the number of self-avoiding walks of length n satisfied $\sigma_{n+2}/\sigma_n \to \mu^2$, where μ is the connective constant.

Harry's almost 200 papers have been cited 3781 times by 2329 authors. However, these statistics underestimate his impact. In baseball terms, Harry was a closer. When he wrote a paper about a topic, his results often eliminated the need for future work on it. Harry was almost too smart. When most of us are confronted with a problem, we need to try different approaches to find a route to a solution. Harry simply bulldozed over all obstacles. He needed 129 pages in the *Memoirs of the AMS* to answer the question: "Which processes with stationary independent increments hit points?"—a topic he spoke about at the International Congress in Nice in 1970.

In 1980 Harry wrote a paper titled, "The critical probability of bond percolation on the square lattice equals ½," which was published in *Communications in Mathematical Physics*. This was followed by an explosion of results by him that literally filled a book: *Percolation Theory for Mathematicians*. I visited Cornell in 1980–81 and had the pleasure of watching him lecture on these results. I feel sorry for the graduate students in the course who were trying to take notes. My guess is that Harry planned his lectures while swimming laps in the pool at noon. Often he would start giving a proof and then go back and insert a lemma writing diagonally on the board. The lectures were often chaotic, but it was wonderful for me to see how he thought.

Harry was invited to give a talk at the 1982 International Congress in Warsaw on his work in percolation. His title was "Percolation theory and resistance of random electrical networks." However, due to demonstrations in Poland in 1982 by members of Solidarity, which were suppressed by the communist regime using deadly force and the imposition of martial law, the meeting was delayed until the summer of 1983.[For an interesting account see Anthony Ralston's article in the *Mathematical Intelligencer,* 6(1)]. Sixteen of the 125 people giving 45-minute talks did not attend. I believe that Harry did not go in order to protest the human rights violations but that is what you would expect from a man who had a slide in his 2002 plenary talk at the ICM in Beijing listing the names of scientists who had "received long jail sentences for peaceful activities."

In 1984 Harry gave lectures on first passage percolation at Saint-Flour. This subject dates back to Hammersley's 1966 paper and was greatly advanced by Smythe and Weirman's 1978 book. However, Harry's paper attracted a number of people to work on the subject and it has continued to be a very active area. [See *50 years of First Passage Percolation* by Auffinger, Damron, and Hanson: https://arxiv.org/abs/1511.03262].

I find it interesting that Harry listed only six papers on his Cornell web page. Five have already been mentioned; the sixth is "On the speed of convergence in first-passage percolation," *Ann. Appl. Probab.* 3(2) (1993), 296–338.

Harry worked in a large number of areas. There is not enough space for a systematic treatment so I will just tease you with a list of titles. Sums of stationary sequences cannot grow slower than linearly. Random difference equations and renewal

Continues on **page 13**

Continues from **page 12**

theory for products of random matrices. Subdiffusive behavior of a random walk on a random cluster. Greedy lattice animals. How long are the arms of DLA? If you want to try to solve a problem Harry couldn't, look at his papers on Diffusion Limited Aggregation.

In the late 1990s, Maury Bramson and I organized a conference in honor for Harry's 66 ⅔'s birthday. (We missed 65 and didn't want to wait for 70.) A distinguished collection of researchers gave talks and many contributed to a volume of papers in his honor called *Perplexing Problems in Probability*. The 21 papers in the volume provide an interesting snapshot of research at the time. If you want to know more about Harry's first 150 papers, you can read my 32-page summary of his work that appears in that volume.

According to math genealogy, Harry supervised 17 Cornell PhD students who received their degrees between 1962–2003. Maury Bramson and Steve Kalikow were part of the Cornell class of 1977 that included Larry Gray and David Griffeath who worked with Frank Spitzer. (Fortunately, I graduated in 1976!). Yu Zhang followed in Harry's footsteps and made a number of contributions to percolation and first passage percolation. I'll let you use Google to find out about the work of Kenji Ichihara, Antal Jarai, Sungchul Lee, Henry Matzinger and David Tandy.

Another "broader impact" of Harry's work came from his collaborations with a long list of distinguished co-authors: Vladas Sidoravicius (12 papers), Ross Maller (10), Frank Spitzer (8), Geoffrey Grimmett (7), Yu Zhang (7), Itai Benjamini (6), J.T. Runnenberg (5), Roberto Schonmann (4), Rob van den Berg (4), … I wrote four papers with him, all of which were catalyzed by an interaction with another person. In response to question asked by Larry Shepp, we wrote a paper about an inhomogeneous percolation which was a precursor to work by Bollobas, Janson, and Riordan. "Making money from fair games," joint work with Harry and Greg Lawler, arose from a letter A. Spataru wrote to Frank Spitzer. I left it to Harry and Greg to sort out the necessary conditions.

Harry wrote three papers with Jennifer Chayes. With a leather-jacketed Cornell postdoc, her husband Lincoln Chayes, Geoff Grimmett and Roberto Schonmann, he studied "The correlation length for the high density phase." With the manager of the Microsoft Research Group, her husband Christian Borgs, and Joel Spencer, he wrote two papers, one on the birth of the infinite component in percolation and another on conditions implying hyperscaling.

As you might guess from my narrative, Harry Kesten received a number of honors. He won the Brouwer medal in 1981. Named after L.E.J. Brouwer, it is The Netherlands' most prestigious award in mathematics. In 1983, he was elected to the National Academy of Science. He gave the 1986 IMS Wald Lectures. In 1994, he won the SIAM's Pólya Prize. In 2001 he won the AMS Steele Prize for lifetime achievement.

Being a devout Orthodox Jew, Harry never worked on the Sabbath. On Saturdays in Ithaca, I would often drive past him taking a long walk on the aptly named Freese Road, lost in thought.

Sadly, Harry is now gone, but his influence on the subject of probability will not be forgotten.

Rick Durrett, Duke University

NOMINATE AN IMS SPECIAL LECTURER

Submit a nomination: **https://www.imstat.org/ims-special-lectures/nominations/**

The IMS Committee on Special Lectures is accepting nominations for these IMS Named and Medallion Lectures in 2019:

- **2020 & 2021 Wald Lecturers**
- **2020 Le Cam Lecturer**
- **2022 Medallion Lecturers**

Send your nomination by October 1, 2019. Information on all lectures is available at https://www.imstat.org/ims-special-lectures/

Obituary: Joan Rosenblatt

1926–2018

Photo: National Institute of Standards and Technology

Joan Rosenblatt

Joan Eliot Raup Rosenblatt, a fellow of both the Institute of Mathematical Statistics and the American Statistical Association and former President of the Women's Caucus of the ASA, died in Rockville, Maryland on 5 December 2018 at the age of 92. Her distinguished career in public service includes four decades at the US National Bureau of Standards (later, National Institute of Standards and Technology). Rosenblatt first joined the NBS in 1955 as a Mathematician, rising through the ranks to become first Assistant Chief and then Chief of the Statistical Engineering Section. In 1979, she became Deputy Director of the NBS Center for Applied Mathematics, and eventually became Director of the Computing and Applied Mathematics Laboratory at NIST, the position from which she retired in 1995.

A native of New York City, Joan Eliot Raup was born on 15 April 1926, the eldest child of two academics, Clara Eliot, an economist at Barnard College, and R. Bruce Raup, a philosopher at Columbia Teachers College. She attended the experimental Lincoln School at Teachers College and, after completing high school in Westchester County, earned a bachelor's degree in mathematics from Barnard College at the age of 20. After Barnard, Joan Raup was awarded one-year internship in Washington, DC, funded by the Rockefeller Foundation's National Institute of Public Affairs.

The internship brought her first to the US Census Bureau and then to the Bureau of the Budget, where she worked in the Division of Statistical Standards, then under the direction of Stuart A. Rice. At that time, Rice was deeply involved in planning the first postwar International Statistics Conferences, to be held in DC in September 1947. At the end of her internship year, Joan Raup joined the staff of the conferences' organizing committee, helping to edit the five-volume conference proceedings. During 1948 she also returned to work briefly as a statistical analyst at the Bureau of the Budget. By the end of two years' immersion in statistics, she had made many valuable contacts—among them, Churchill Eisenhart at NBS and David Rosenblatt, a senior economist at the Budget Bureau, whom she would marry in 1950.

She had also decided to pursue a PhD in mathematical statistics. Between 1948 and 1956, Joan Raup Rosenblatt worked on a PhD in the relatively new program in mathematical statistics at the University of North Carolina at Chapel Hill. After her marriage, much of her work toward the PhD was completed in absentia, or while commuting between Chapel Hill and DC. Her dissertation, *On a Class of Nonparametric Tests*, was written under the direction of Wassily Hoeffding.

During her last year of graduate study, Churchill Eisenhart hired her to work in the statistical group at NBS. At NBS (later, NIST), she worked on a variety of statistical applications, including electronic system reliability, colorimetry, hydrology, and studies of coal mine dust and blood lead levels. But perhaps her greatest level of public visibility came as a result of her involvement in the Vietnam-era draft lottery.

From 1969 through 1975, the US Selective Service System conducted an annual lottery to determine the birthdate order in which all men aged 18–26 would be called to serve in the US armed forces during the coming year. Prior to 1969, the SSS had used the "draft the oldest man first" method; the lottery was instituted in an attempt to make the process of induction into an unpopular war appear at least somewhat more fair. But the 1969 lottery drawing was widely seen as insufficiently random (and seemed to increase public resistance to the Vietnam-era draft). In response, the Selective Service turned to NBS to produce a more effective method of randomization for each of the remaining lotteries. During this period, Joan Rosenblatt often served as the public face of the lottery randomization process, appearing in at least one press conference and serving as an official observer for at least one of the lottery drawings. With James J. Filliben, she coauthored a widely-cited 1971 *Science* article describing the randomization methodology.

After her retirement from NIST, Joan Rosenblatt continued to live in Washington, DC until 2009, when she moved to a retirement community in Bethesda, Maryland. Her husband David Rosenblatt, also a fellow of the ASA, died in 2001; they had no children. She was also predeceased by a younger sister and brother, and is survived by a sister and brother-in-law, Ruth Raup Johnson and Miles Johnson; a brother-in-law, statistician Murray Rosenblatt; and several nieces and nephews.

Margaret A.M. Murray, University of Iowa

Report: Conference Honoring Tom Liggett

Interacting Particle Systems, Statistical Mechanics and Related Topics, A Conference to Honor the Contributions of Thomas M. Liggett on the Occasion of his 75th Birthday (**https://sites.google.com/view/ips2019/home**) took place at the Institute for Pure and Applied Mathematics (IPAM) on the campus of the University of California, Los Angeles (UCLA), from March 7–9, 2019. Amber Puha, one of the meeting's organizers, writes:

Throughout his career, Tom Liggett has played an integral role in the development and proliferation of work in this area. It began in the early 1970s, when Chuck Stone, his then UCLA colleague, showed him a copy of Frank Spitzer's 1970 article, "Interaction of Markov Processes," (*Advances in Mathematics,* **5**, 246–290), saying, "I think you'll find something interesting in this." He did: it sparked a line of work that continued through his eventual induction into the National Academy of Sciences in 2008.

The list of speakers at the conference in Tom's honor consisted of David Aldous, Maury Bramson, Pietro Caputo, Michael Damron, Pablo Ferrari, Alexander Holroyd, Matthew Junge, Kay Kirkpatrick, Oren Louidor, Hanbaek Lyu, Chuck Newman, Robin Pemantle, Eviatar Procaccia, Insuk Seo, Timo Seppäläinen, S.R.S. Varadhan, Maria Eulalia Vares and Ruth Williams. Almost 80 researchers registered for the event. It was a productive environment.

IPAM–UCLA proved to be an ideal location for the conference. Tom Liggett spent his entire academic career at UCLA, having arrived in 1969 and staying until his retirement in 2011. He was active in the department throughout his career, including serving as department chair from 1991–1994. He also met his wife, Christina, at UCLA: she worked in administrative support in the Department of Mathematics. The two fell in love and married in 1972. Outside of his academic career, Tom is a family man. He was thrilled that his wife Chris and their two children, Timothy and Amy, were able to attend social functions associated with this conference: they were all present at the dinner, with their own families in tow [*although without Tom himself—see below*]. His son Timothy gave an inspiring speech about growing up in the Liggett household. He also explained the challenges of convincing his children of their grandfather's greatness, until he realized he could simply point out that grandpa was on Wikipedia.

I was his student in the mid-to-late 1990s. Being a Liggett student is a rarity. In his lengthy 42 years at UCLA, Tom only had nine students total: Norman Matloff, 1974 (UC Davis); Diane Schwartz, 1974 (CSU Northridge); Enrique Andjel, 1981 (U. Provence, Marseille, France); Dayue Chen, 1989 (Peking University); Xijian Liu, 1991 (US Census Bureau); Shirin Handjani, 1993 (San Diego); Amber Puha, 1998 (CSU San Marcos); Paul Jung, 2003 (KAIST); Alexander Vandenberg-Rodes, 2011. I consider myself fortunate to be among them. I am told that Tom found it tricky to mentor students. I didn't notice that. He was a perfect advisor for me. He gave me an ideal problem that he didn't know how to solve, but he suspected that some available tools might be applied to give headway. He held me accountable, and supported me when I needed a push, but without stealing my chance to develop as a researcher. I am forever grateful for his investment—and I am certain that I am not alone. Over his career, he mentored numerous postdoctoral scholars in the same fashion. In the spirit of fostering the development of the next generation of mathematical researchers, the conference included a poster session where many early career researchers presented: Erik Bates (Stanford); Bounghun Bock (Georgia Tech); Wai-Kit Lam (U. Minnesota); Jiho Lee (KAIST); Marcus Michelen (U. Pennsylvania); Carlos Pachecho (CINVESTAV); Joseph Stover (Gonzaga); Nantawat Udomchatpitak (UCSD); Jianfei Xue (U. Arizona); Fan Yang (UCLA); Jiayan Ye (Texas A&M); Mei Yin (U. Denver).

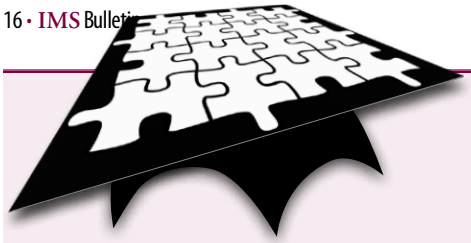
Unfortunately, Tom was unable to attend this conference in his honor. He managed to get bronchitis, which morphed into pneumonia and landed him a ten-day, all-inclusive stay at Santa Monica Hospital. Many from the conference made a trip to visit him there.

Tom's son-in-law Darren filmed the after-dinner remarks, which featured Higgledy Piggledy (https://en.wikipedia.org/wiki/Double_dactyl) tributes. Here is Holroyd's offering:

Carefully, logic'ly,
Hypermethodic'ly
Scribb'ling away in Los
Angeles sun,

[He] opened the eyes of a
Whole generation: un-
countable state Markov
Chains can be fun!

Upon Tom's return home, he got a private viewing of the entire affair. At home for just over two months, now, his recovery is slow, but steady. We encourage everyone to keep Tom in their warmest thoughts as he continues to recover.



Student Puzzle Corner 24

Here's Anirban DasGupta's latest puzzle. He says:

To encourage many students to send an answer, we're posing a very simple problem on random walks this time:

Let $n \geq 1$ be a given positive integer. A point in the plane starts a random walk on the finite lattice (i, j), $0 \leq i, j \leq n$ at the origin (0, 0). It moves one step up if a fair coin toss results in a head, and one step to the right if the coin toss results in a tail. If there is no more room to move up, i.e., if it is already at a point (i, n), then it stays at that point; likewise, if it has no more room to move further to the right. Calculate μ_n, the expected number of steps after which the coin arrives at the point (n, n):

a) if $n = 3$;

b) for a general n.

c) For a special mention, what can you say about the asymptotic rate of μ_n?

Deadline: June 25, 2019

Student IMS members are invited to submit solutions (to bulletin@imstat.org with subject "Student Puzzle Corner"). The deadline is **June 25, 2019**.

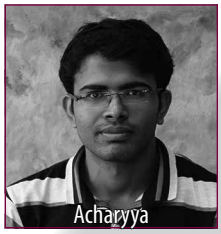
The names of student members who submit correct solutions, and the answer, will be published in the following issue. The Puzzle Editor's decision is final.

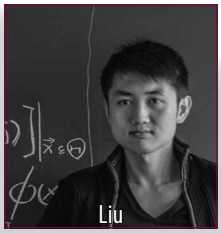
Solution to puzzle 23

Contributing Editor Anirban DasGupta writes on the previous puzzle:

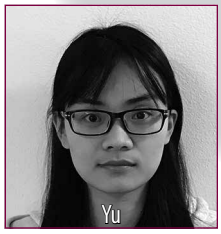
There are many different estimator sequences T_n that have the stated properties. The important fact to utilize is that for n ≥ 7, the Pitman estimate of μ is unique minimax, a result first proved by Charles Stein, and later generalized by Larry Brown. The Pitman estimate , say $S_n(X_1, \cdots, X_n)$, is unbiased (for such n) and has a constant risk. One may thus take the Pitman estimate sequence and use $T_n = S_{n-1}(X_1, \cdots, X_{n-1})$; that is, drop one data value and use the Pitman estimate. One can also use the MLE of μ for T_n.

IMS Hannan Graduate Student Travel Awards





The ten winners of this year's Hannan Travel Awards are, clockwise from top left: **Satwik Acharyya**, Texas A&M University; **Joshua J. Bon**, Queensland University of Technology; **Jeremiah Zhe Liu**, Harvard University; **Hyeyoung Maeng**, London School of Economics; **Abhijoy Saha**, The Ohio State University; **Martin Wiegand**, University of Manchester; **Fei Xue**, University of Illinois at Urbana-Champaign; **Ting Ye**, University of Wisconsin–Madison; **Shan Yu**, Iowa State University; **Yichen Zhang**, New York University. Congratulations!



Hand Writing: From models to money

Contributing Editor David Hand, Imperial College London, explains how a US state lottery was gamed:

We statisticians all know that buying lottery tickets is a fool's game. Unless, that is, you regard the warm glow from dreaming about what you would do if you did win as worth the cost of a ticket. Short of fraud, it is not possible to change the odds that any one ticket will win. But you can change the chance that you will win by changing the number of tickets that you buy. Buy enough tickets—all possible combinations of lottery numbers—and you are guaranteed to win (a share of) the jackpot. Since, in most lotteries, the jackpot is rolled over to the next week if no-one wins, and since sometimes this can happen for many weeks in a row, the jackpot can build up to such huge sums that the expected winnings exceed the cost of the tickets.

This does require considerable financial resources and pretty impressive organisation—buying possibly many million tickets between two lottery draws—but several groups have attempted it, with some measure of success.

Other lotteries, however, have had a different system when the jackpot was not won. They accumulated the jackpot for a while, but when it exceeded a certain sum, they rolled it down and increased the sizes of the lesser prizes.

This was true of the Michigan Winfall game, for example. If the jackpot rolled up to over $5 million, the next draw would have no jackpot, but instead the money would be distributed across tickets matching fewer than six numbers. The brochure for the lottery helpfully gave the probabilities of three numbers winning a prize, four numbers winning, and five numbers winning. It was clear (at least to those who understood such things) that a roll-down meant the expected winnings exceeded the cost of the tickets. Indeed, on a roll-down, payouts for these lesser wins would be substantially greater than what they would normally have been without a roll-down.

This property was spotted by Jerry Selbee, a then recently retired convenience store owner, who took advantage of it. Starting small, he gradually built up an operation, creating a company, GS Investment Strategies LLC, with shares owned by family and friends, which won substantial sums of money. Good things don't last forever, however, and in 2005 that lottery was shut down.

But then a similar lottery was launched in Massachusetts, the Cash Winfall, and Jerry organised a system to buy tickets for that. By 2009, he had won more than $20 million, making a profit of more than $5 million.

The roll-down properties of these lotteries is simple enough, and Jerry wasn't the only one to spot it. Others did also, including a group of MIT students and a biomedical researcher at Boston University. The competition between these various groups meant that the winnings of each of them were smaller than they had hoped, so the MIT group devised a strategy to tackle this. Spotting a draw where the jackpot was too small to roll down, they suddenly bought $1.4 million worth of tickets, pushing it into a roll-down without giving the operators time to announce that one would take place, so that Jerry Selbee did not bother to buy tickets, and lost out on a substantial win.

You can read more about this, and how it all ended, at https://highline.huffingtonpost.com/articles/en/lotto-winners/.

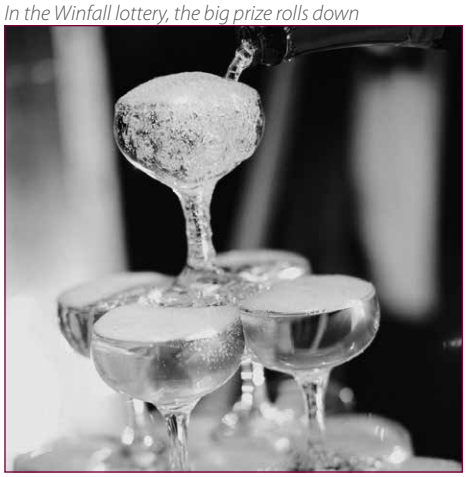
From a statistical perspective, the important point here is that the roll-down lotteries had different structure from the rollover lotteries. To make valid inferences—or to take advantage of the structure—you need to be sure you understand that structure. This is just as true for statistical modelling as it is for lotteries.

A very familiar example is in a paired comparisons *t*-test. Ignoring the pairing and the correlation within pairs results in an overestimate of the between-group-mean variance, with a lower probability of detecting a genuine difference.

Another, less familiar, example is in supervised classification. Here, systems (e.g. in medical diagnosis, speech recognition, and so on) implicitly or explicitly compare an estimated probability with a threshold, assigning an object to one class if the estimate is above the threshold and to another class otherwise. But some situations have extra structure. In classifying human chromosomes, for example, rather than assigning each chromosome to a class individually, we can take advantage of the known fact that they come in twenty-two pairs, plus a couple of sex chromosomes. Looking at the overall distribution of chromosomes to classes results in superior classification to looking at them individually.

The important thing is to look at the big picture, ensuring that you capture all relevant aspects of the phenomenon being modelled. The better your model, the better your understanding and actions.

In the Winfall lottery, the big prize rolls down



IMS meetings around the world

Joint Statistical Meetings: 2019–2023

IMS sponsored meeting

IMS Annual Meeting @ JSM 2019

July 27–August 1, 2019. Denver, CO, USA.

w http://ww2.amstat.org/meetings/jsm/2019/

We hope you'll join us in Denver for the 2019 IMS Annual Meeting, in conjunction with JSM. With more than 6,500 attendees (including over 1,000 students) from 52 countries, and over 600 sessions, it's a busy few days! The theme this year is *"Statistics: Making an Impact."*

Registration and housing are now open: book soon!

IMS sponsored meetings: JSM dates for 2020–2024

JSM 2020	**IMS Annual Meeting @ JSM 2021**	**2022 Joint Statistical Meetings**	**IMS Annual Meeting @ JSM 2023**	**JSM 2024**
August 1–6, 2020	**August 7–12, 2021,**	**August 6–11, 2022**	**August 5–10, 2023**	**August 3–8, 2024**
Philadelphia, PA	**Seattle, WA**	**Washington DC**	**Toronto, ON, Canada**	**Portland, Oregon**

IMS Sponsored meeting

Bernoulli/IMS 10th World Congress in Probability and Statistics

August 17–21, 2020. Seoul, South Korea

w http://www.wc2020.org

Program chair: Siva Athreya; Local chair: Hee-Seok Oh.

The 10th World Congress in Probability and Statistics (WC2020), jointly organized by the Bernoulli Society and IMS, will be hosted by Seoul National University. We are expecting to attract more than 900 experts from over 40 countries.

This upcoming World Congress will take a comprehensive look at the latest developments in statistics and probability as well as the current trends emerging from all associated fields. A special lecture series will document a variety of modern research topics with in-depth uses and applications of these disciplines as they relate to science, industrial innovation, and society as a whole.

IMS co-sponsored meeting

20th INFORMS Applied Probability Society Conference

July 3–5, 2019. Brisbane, Australia

w http://informs-aps.smp.uq.edu.au/

The plenary speakers for the conference are: Charles Bordenave, Université de Toulouse, France (IMS Medallion Lecturer); Ton Dieker, Columbia University; Nelly Litvak, University of Twente and Eindhoven University of Technology, Netherlands; and Sidney Resnick, Cornell (Marcel Neuts Lecturer). A number of related events are being held before and after this conference: see the website for details.

IMS co-sponsored meeting NEW

INDSTATS2019: "Innovations iN Data and Statistical Sciences"

December 26–30, 2019. Mumbai, India

w http://www.intindstat.org/IISA2019

The aim of INDSTATS2019 is to engage leading experts and junior members in all topics related to statistics and data sciences. The four and half days of vibrant conference activities will consist of pre-conference short courses (on Dec 26th), plenary talks by eminent speakers, invited sessions, contributed sessions, panel discussions and student paper competitions. Past IISA annual conferences in India and the US have attracted over 300 participants, across academia, industry, government, regulatory agencies and non-profit organizations. Specific topics include probability and statistics, survival analysis, personalized medicine, big data and machine learning methodology, econometrics, Bayesian statistics, clinical trial data and innovations, high-dimensional data analysis, etc.

At a glance: forthcoming IMS Annual Meeting and JSM dates

2019

IMS Annual Meeting @ JSM: Denver, **July 27–August 1, 2019**

2020

JSM: Philadelphia, **August 1–6, 2020**

IMS Annual Meeting/ 10th World Congress: Seoul, South Korea, **August 17–21, 2020**

2021

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

2022

IMS Annual Meeting: TBC

JSM: Washington, **August 6–11, 2022**

2023

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

IMS sponsored meetings

ENAR dates, 2020–2020
March 22–25, 2020: in Nashville, TN
March 14–17, 2021: Baltimore, MD
March 27–30, 2022: Houston, TX

w www.enar.org/meetings/future.cfm

The 2020 ENAR/IMS meeting will be in Nashville (and the following year in Baltimore, and then Houston in 2022). Featuring a *Fostering Diversity in Biostatistics* workshop, connecting underrepresented minority students interested in biostatistics with professional biostatisticians in academia, government and industry.

IMS co-sponsored meeting

Statistics and the Life Sciences: Creating a Healthier World
November 15, 2019
Boston University School of Public Health

w http://www.bu.edu/sph/news-events/signature-programs/deans-symposia/

IMS Representative(s) on Program Committees: Josee Dupuis, Eric Kolaczyk

A new website is under construction for this one-day meeting, but this URL gives details of the Dean's Symposia, of which this is one. For now, please note the date.

IMS co-sponsored meeting

IMS-China 2019
July 6–10, 2019. Dalian, China

w http://ims-china.org/index.php

The 2019 IMS-China International Conference on Statistics and Probability, hosted by Dalian University of Technology, will be held at Dalian in Liaoning, China, on July 6-10, 2019. Keynote speakers: Jianqing Fan (Princeton) and Shigeo Kusuoka (University of Tokyo).
All talks will take place at the Dalian International Conference Center. Online registration: http://ims-china.org/index.php.

IMS co-sponsored meeting

Statistics Conference in Honor of Aad van der Vaart's 60th Birthday
June 17–21, 2019. Leiden, The Netherlands

w http://pub.math.leidenuniv.nl/~schmidthieberaj/aadbirthday/index.html

The conference, honoring Aad van der Vaart's 60th birthday and many professional achievements, will bring together collaborators and leading researchers in theoretical and applied statistics. Topics include nonparametric Bayes, high-dimensional/nonparametric statistics and applications of statistics in the life sciences.

If you are interested in participating, please register as soon as possible on the conference webpage. The conference fee is €200, which includes the welcome reception on Monday afternoon, and sandwich lunch, coffee and tea during the conference.

For further information, please do not hesitate to contact us (via the email address: b.t.szabo@math.leidenuniv.nl).

IMS co-sponsored meeting

Design and Analysis of Experiments
October 17–19, 2019
Knoxville, TN

w https://haslam.utk.edu/dae2019

Deadline for submission of abstracts and requests for travel support: June 30, 2019.
The purpose of the Design and Analysis of Experiments (DAE) conference series, of which this is the 10th, is to provide support and encouragement to junior researchers in the field of design and analysis of experiments, and to stimulate interest in topics of practical relevance to science and industry. The meetings also attract top-notch senior researchers, and emphasize interaction between them and junior researchers. DAE 2019 will focus on emerging areas of research in experimental design, as well as novel innovations in traditional areas. A feature of the DAE series is **pairing of senior and junior researchers** for mentoring purposes and DAE 2019 at UT will follow this tradition. There will be 10 invited sessions, each with three speakers, two poster sessions, and opportunities to lead or participate in roundtable discussions as well. **Travel support** may be available for students and junior researchers who received their doctorate degrees after 2014.

IMS co-sponsored meeting

ICIAM 2019: the 9th International Congress on Industrial and Applied Mathematics
July 15–19, 2019. Valencia, Spain

w https://iciam2019.org/index.php

The 9th International Congress on Industrial and Applied Mathematics (ICIAM 2019) will be held in Valencia, Spain, from July 15–19, 2019. IMS is a member of ICIAM.

SPECIAL OFFER: Discounted travel with Lufthansa Group Partner Airlines & Iberia Airlines: see website for details.

IMS co-sponsored meeting

The 7th International Workshop in Sequential Methodologies
June 18–21, 2019. Binghamton, USA

w https://sites.google.com/view/iwsm2019

Hosted by Department of Mathematical Sciences at Binghamton University, State University of New York (SUNY), USA.

More IMS meetings around the world

IMS co-sponsored meeting

2019 9th IMS–FIPS Workshop
June 15–17, 2019
Fudan University, Shanghai, China

w http://www.sta.cuhk.edu.hk/ims-fips-2019.sta.cuhk.edu.hk/

2019 Workshop on Finance, Insurance, Probability and Statistics Plenary speakers: Robert Engle (New York Univ), Ioannis Karatzas (Columbia University), Per Mykland (University of Chicago).

IMS co-sponsored meeting

Symposium on Data Science and Statistics (SDSS) 2019
May 29–June 1, 2019
Bellevue, Washington, USA

w https://ww2.amstat.org/meetings/sdss/2018/

Now an IMS co-sponsored meeting, this is the second annual SDSS. It provides an opportunity for data scientists, computer scientists and statisticians to exchange ideas. Registration is open.

IMS co-sponsored meeting

41st Conference on Stochastic Processes and their Applications (SPA)
July 8–12, 2019
Evanston, IL, USA

w http://sites.math.northwestern.edu/SPA2019/

The 41st Stochastic Processes and their Applications conference will take place July 8–12, 2019, in Evanston, USA. It will feature the following invited lectures. **Plenary Speakers:** Cécile Ané, Béatrice de Tilière, James R. Lee, Dmitry Panchenko, Yanxia Ren, Allan Sly, Caroline Uhler. **IMS Medallion Lectures:** Krzysztof Burdzy and Etienne Pardoux. **Lévy Lecture:** Massimilliano Gubinelli. **Doob Lecture:** Jeremy Quastel. **Schramm Lecture:** Stanislav Smirnov.

IMS co-sponsored meeting

2019 WNAR/IMS/JR meeting
June 23–26, 2019
Portland, OR, USA

w http://www.wnar.org/event-3013994

The 2019 WNAR/IMS/JR [*JR = Japanese Region*] meeting will be in Portland, Oregon from June 23–26, hosted by Oregon Health & Science University (OHSU). Portland, Oregon's largest city, is known for eco-friendliness with high walkability, parks, bridges and bicycle paths.

The scientific program features short courses, invited and contributed oral sessions, and student paper sessions. The local organizer is Byung Park (parkb@ohsu.edu), and the program chair is Meike Niederhausen (niederha@ohsu.edu).

IMS co-sponsored meeting

ACM–IMS Interdisciplinary Summit on the Foundations of Data Science
June 15, 2019. San Francisco, CA, USA

w https://acct-www.acm.org/data-science-summit

An interdisciplinary event bringing together researchers and practitioners to address fairness, privacy, ethics, causal inference, deep learning, reinforcement learning, and the future of data science. ACM (the Association for Computing Machinery) and IMS are the two key academic organizations in these areas. This new joint venture aims to propel data science and to engage and energize our communities to work together.

IMS co-sponsored meeting

12th International Conference on Bayesian Nonparametrics (BNP12)
June 24–28, 2019. Oxford, UK

w http://www.stats.ox.ac.uk/bnp12/

The Bayesian nonparametrics (BNP) conference is a bi-annual international meeting bringing together leading experts and talented young researchers working on applications and theory of nonparametric Bayesian statistics. Keynote speakers are Tamara Broderick (MIT), Long Nguyen (Michigan) and Aad van der Vaart (Leiden). CALL FOR POSTERS: **deadline May 15**. See details on http://www.stats.ox.ac.uk/bnp12/registration.html

Note that O'Bayes 2019 follows this meeting in Warwick, 70 miles away [see the announcement below]

IMS co-sponsored meeting

O'Bayes 2019: Objective Bayes Methodology Conference
June 29–July 2, 2019
University of Warwick, UK

w https://warwick.ac.uk/fac/sci/statistics/staff/academic-research/robert/0bayesconference/

O'Bayes 2019 is dedicated to facilitate the exchange of recent research developments in objective Bayes theory, methodology and applications, and related topics, to provide opportunities for new researchers, and to establish new collaborations and partnerships. The meeting is the biennial meeting of the Objective Bayes section of the International Society for Bayesian Analysis (ISBA).

Note that O'Bayes 2019 is immediately after the BNP 2019 conference in Oxford [see announcement above], which takes place 24–28 June 2019, close enough in both travel time (45 minutes by direct train) and distance (70 miles) to benefit members of both the Objective Bayes and Bayesian non-parametric communities, who should consider joint attendance. Registration is open now.

Other meetings and events around the world

U-M Statistics: 50th Anniversary Symposium NEW
September 20–21, 2019
Ann Arbor, Michigan
w https://sites.lsa.umich.edu/stats-50th-anniversary/

The Department of Statistics at the University of Michigan is excited to be celebrating its 50th Anniversary on September 20–21, 2019 in Ann Arbor, Michigan. [*See the article on page 7.*] We would like to invite alumni and other fellow researchers of statistics to join us in celebrating this important milestone. The 50th Anniversary Symposium will feature talks led by former professors and alumni, as well as panel discussions.

Keynote speakers include **Michael I. Jordan** (University of California, Berkeley), **Susan Murphy** (Harvard University), and **Jeff Wu** (Georgia Institute of Technology).

For more information, and to register for the symposium, visit the meeting website: https://sites.lsa.umich.edu/stats-50th-anniversary/

Send the details to bulletin@imstat.org

9th International Conference on Lévy Processes NEW
July 15–19, 2019
Samos, Greece
w https://actuarweb.aegean.gr/levy2019/

The 9th International Conference on Lévy Processes will be held on the island of Samos, Greece, 15–19 July, 2019. The aim of the conference is to bring together a wide range of researchers, practitioners and graduate students whose work is related to Lévy processes and their applications. The satellite Summer School will take place in Athens from 8 to 12 July [*see separate announcement below*].

Topics will include: Biological Applications; Fluctuation theory; Infinite divisibility; Lévy trees; Numerical methods; Potential theory; Queues; Risk theory (including Finance and Insurance); Stable and self-decomposable processes; Stochastic analysis; and Stochastic partial differential equations.

For details, please, send us an e-mail: levy2019@aegean.gr

Summer School on Lévy Processes NEW
July 8–12, 2019. Athens, Greece
w https://actuarweb.aegean.gr/levy2019/summer-school.html

A satellite Summer School to the 9th International Conference on Lévy Processes is organized. It will take place in Athens, Greece, from July 8 to 12, 2019. There will be four lectures (including tutorials) given by the following experts in the field:

Leif Döring (University of Mannheim, Germany): *Stochastic Analysis for Lévy Processes.*

Takis Konstantopoulos (University of Liverpool, UK): *Wiener-Hopf factorisation.*

Andreas E. Kyprianou (University of Bath, UK): *Self-Similar Markov Processes.*

Antonis Papapantoleon (National Technical University of Athens, Greece): *Introduction to Lévy Processes.*

The goal of the Summer School is to prepare PhD students, Post-docs and researchers in the field for the forthcoming conference. Participants will also have the opportunity to present their research on Wednesday and Friday afternoon.

Anyone interested to participate should register by sending an e-mail to the following address: levy2019@aegean.gr

More meetings around the world

ECAS2019: Statistical Analysis for Space–Time Data

NEW

July 15–17, 2019

Lisbon, Portugal

w https://ecas2019.math.tecnico.ulisboa.pt/

Limited number of places.

ECAS2019 will take place in Lisbon, Portugal, on 15-17 July 2019. It is a great opportunity to attend four courses lectured by renowned experts in the field.

Adrian Baddely & Ege Rubak: *Spatial Point Patterns: Methodology and Applications with R*

Patrick Brown: *Statistical models and inference for spatio-temporal areal data*

Liliane Bel: *New trends in spatio-temporal geostatistics*

Haavard Rue & Haakon Bakka: *Spatial and spatio-temporal models using the SPDE-approach*

Participants are also invited to present their own work in a poster format (although any participant can attend the courses without the presentation of a poster).

The European Courses in Advanced Statistics (ECAS) are intended to achieve postgraduate training in special areas of statistics for (especially first year) PhD students, researchers, university lecturers and professionals. ECAS2019 on Statistical Analysis for Space–Time Data is organized by the Portuguese Statistical Society (SPE) and the Spanish Society of Statistics and Operational Research (SEIO).

8th Conference on High Frequency Finance and Data Analytics

NEW

June 27–29, 2019

Stevens Institute of Technology, Hoboken, NJ, USA

w https://kolmogorov.fsc.stevens.edu/hff_conference/index.php

HF2019 will share the latest research and model applications for data sampled with high frequency. This year, the focus is on applications of statistical learning algorithms to finance — particularly with respect to high-frequency data. We are also encouraging poster submissions and student talks (deadline June 1). This three-day conference gathers key thought leaders from academia, industry and government from across the globe in the areas of mathematical finance, financial engineering, quantitative finance, stochastic processes and applications, and more. The conference includes showcases of student and faculty research; networking opportunities; and social events, including a battle of the bands. If you are interested in becoming an employer for the virtual career fair please contact the organizers at hfconference@stevens.edu.

Quantitative Challenges in Cancer Immunology and Immunotherapy

NEW

November 4–5, 2019

Harvard Medical School Conference Center, Boston, MA, USA

w https://www.hsph.harvard.edu/2019-pqg-conference/

The 2018 Nobel Prize in Medicine was awarded to Drs. Allison and Honjo for their pioneering discoveries that led to the development of cancer immunotherapy. From the early years of cytokine and monoclonal antibody therapies, to the recent immune checkpoint inhibitors, adoptive cell transfer, and cancer vaccine therapies, cancer immunotherapies have brought paradigm shifts to cancer treatment. Cancer immunology and immuno-oncology research also lead the efforts in early technology development and adoption. Cutting edge high throughput sequencing, genome engineering, single cell genomics, imaging, and proteomics techniques are being applied to cancer immunology and immuno-oncology research and clinical applications. As a result, computational analyses and quantitative modeling have become the critical bottlenecks in understanding tumor immune microenvironment and immunotherapy response.

Many important yet challenging questions remain to be answered. What is the immune cell composition in the tumor microenvironment? How do cancer cells and different immune cells interact with each other, and which mutations are immunogenic? How do T cell receptors and B cell receptors recognize tumor antigens? How to predict patient response to immunotherapies? Are there new drug targets to improve immunotherapy response?

The 2019 Conference of the Program in Quantitative Genomics will focus on the computational algorithms, quantitative models, as well as data integration techniques that are under active development to answer these important questions.

The conference will be centered on the following three topics: Session I, Tumor immune deconvolution and single cell analyses; Session II, Neoantigen prediction and immune repertoire modeling; Session III: Regulators and biomarkers of immunotherapy response.

We highly encourage abstract submissions and participation of all researchers, especially junior researchers, for posters and possible platform presentations. **Registration and travel awards will be provided to support junior researchers who submit abstracts.** Stellar abstract award winners will be selected. Three of the stellar abstract award winners will be selected to be presented as 10-minute platform talks. See website for details.

LinStat 2020
June 29–July 3, 2020
Nový Smokovec, High Tatras, Slovakia
w https://linstat2020.science.upjs.sk/

LinStat is a series of conferences on linear statistical modelling held every two years. The purpose of the meeting is to bring together researchers sharing an interest in a variety of aspects of statistics and its applications as well as matrix analysis and its applications to statistics, and offer them a possibility to discuss current developments in these subjects. The topics of the conference include estimation, prediction and testing in linear models, robustness of relevant statistical methods, estimation of variance components appearing in linear models, generalizations to nonlinear models, design and analysis of experiments, including optimality and comparison of linear experiments, and applications of matrix methods in statistics. The work of young scientists is highly encouraged; the best young scientist presentation and poster authors will be Invited Speakers at the next edition of LinStat.

XXXI International Biometric Conference (IBC 2022)
July 10–15, 2022
Riga, Latvia
w https://www.biometricsociety.org/meetings-events/ibcs/

International Biometric Conferences have been sponsored by the International Biometric Society (IBS) since 1947 and represent one of the major activities of the IBS. The 31st meeting will take place at the Radisson Blu Latvija Conference & Spa Hotel. Details TBC.

Employment Opportunities around the world

Australia: Sydney, NSW
UNSW Sydney
Radiocarbon Postdoctoral Research Fellow
https://jobs.imstat.org/job//47374540

New Zealand: Christchurch
University of Canterbury, School of Mathematics and Statistics
Lecturer/Senior Lecturer in Statistics and/or Data Science
https://jobs.imstat.org/job//47901528

New Zealand: Wellington
Victoria University of Wellington
Senior Tutor in Mathematics, Statistics, and Data Science
https://jobs.imstat.org/job//47919324

Switzerland: Lausanne
EPFL
Professorship In Statistics
https://jobs.imstat.org/job//47120969

Switzerland: Lausanne
EPFL
Professorship In Statistics
https://jobs.imstat.org/job//47120981

United Kingdom: Coventry
Department of Statistics
Assistant Professor
https://jobs.imstat.org/job//47933557

United Kingdom: Glasgow
The University of Glasgow, School of Mathematics & Statistics
Lecturer/Senior Lecturer/Reader
https://jobs.imstat.org/job//48169373

United States: Berkeley, CA
University of California, Berkeley, Department of Statistics
Lecturer
https://jobs.imstat.org/job//47693498

United States: Urbana, IL
Department of Mathematics, University of Illinois Urbana-Champaign
Academic Program Specialist
https://jobs.imstat.org/job//47799191

United States: Boston, MA
Brigham and Women's Hospital
Biostatistician
https://jobs.imstat.org/job//47409101

United States: Lincoln, NE
University of Nebraska-Lincoln
tenure-leading Assistant Professor
https://jobs.imstat.org/job//47734039

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

June 2019

June 3–7: Knoxville, TN, USA. NIMBioS: **The Search for Selection** **w** http://www.nimbios.org/tutorials/selection2

June 4–7: El Escorial, Spain. **SYSORM 2019** **w** https://eventos.ucm.es/go/sysorm19

June 9–15: West Greenwich, RI, USA. **Stochastic Spatial Models**, AMS MRC summer conference **w** http://www.ams.org/programs/research-communities/2019MRC-Stochastic

June 10–14: Toronto, Canada. **Workshop on Theory and Applications of Stochastic Partial Differential Equations** **w** http://www.fields.utoronto.ca/activities/18-19/SPDEs

June 11–14: Florence, Italy. **Applied Stochastic Models and Data Analysis International Conference** (ASMDA2019) and **Demographics2019 Workshop** **w** http://www.asmda.es/asmda2019.html

June 12–14: Delft, The Netherlands. **DYNSTOCH 2019** **w** http://web.math.ku.dk/~michael/dynstoch/

IMS June 15: San Francisco, CA, USA. **ACM–IMS Interdisciplinary Summit on the Foundations of Data Science** **w** https://acct-www.acm.org/data-science-summit

IMS June 15–17: Shanghai, China. **2019 9th IMS–FIPS Workshop** **w** http://www.sta.cuhk.edu.hk/ims-fips-2019.sta.cuhk.edu.hk/

June 16–19: Thessaloniki, Greece. **39th International Symposium on Forecasting** **w** https://isf.forecasters.org/

June 16–21: Ascona, Switzerland. **2019 Ascona Workshop: "Statistical Challenges in Medical Data Science"** **w** https://www.bsse.ethz.ch/cbg/cbg-news/ascona-2019.html

IMS June 17–21: Leiden, The Netherlands. **Statistics Conference in Honor of Aad van der Vaart's 60th Birthday** **w** http://pub.math.leidenuniv.nl/~schmidthieberaj/aadbirthday/index.html

IMS June 18–21: Binghamton, USA. **7th International Workshop on Sequential Methodologies (IWSM)** **w** http://sites.google.com/view/iwsm2019

June 18–21: Chania, Greece. **12th Chaotic Modeling & Simulation Conference (CHAOS2019)** **w** http://www.cmsim.org/

June 19–21: Lima, Peru. **VI Congreso Bayesiano de América Latina / Bayesian Congress of Latin America (VI COBAL)** **w** https://sites.google.com/site/cobal2019/

June 19–22: Manizales, Colombia. **3rd International Congress on Actuarial Science and Quantitative Finance** **w** http://icasqf.org/

IMS June 23–26: Portland, OR, USA. **2019 WNAR/IMS meeting** **w** http://www.wnar.org/event-3013994

June 24–27: Uppsala, Sweden. **Perspectives on high-dimensional data analysis (HDDA-IX)** **w** https://indico.uu.se/event/526/overview

IMS June 24–28: Oxford, UK. **12th International Conference on Bayesian Nonparametrics** **w** http://www.stats.ox.ac.uk/bnp12/

NEW June 27–29: Hoboken, NJ, USA. **8th Conference on High Frequency Finance and Data Analytics** **w** https://kolmogorov.fsc.stevens.edu/hff_conference/index.php

IMS June 29–July 2: Warwick, UK. **O'Bayes 2019: Objective Bayes Methodology Conference** **w** https://warwick.ac.uk/fac/sci/statistics/staff/academic-research/robert/0bayesconference/

July 2019

July 1–9: Zagreb, Croatia. **11th International Conference on Extreme Value Analysis** **w** http://web.math.hr/eva2019

IMS July 3–5 [**NOTE CORRECTED DATES**, not July 13–15 as previously listed]: Brisbane, Australia. **20th INFORMS Applied Probability Conference** **w** http://informs-aps.smp.uq.edu.au/

IMS July 6–10: Dalian, China. **2019 IMS-China Conference** **w** http://www.ims-china.org

IMS July 8–12: Evanston, IL, USA. **41st Conference on Stochastic Processes and their Applications (SPA)** **w** http://sites.math.northwestern.edu/SPA2019/

NEW July 8–12: Athens, Greece. **Summer School on Lévy Processes** **w** https://actuarweb.aegean.gr/levy2019/summer-school.html

July 8–12: Guimarães, Portugal. **International Workshop on Statistical Modelling (IWSM2019)** **w** http://www.iwsm2019.org/

July 8–19: Lake Como, Italy. **Bocconi Summer School in Advanced Statistics and Probability** w http://bocconi2019.lakecomoschool.org

July 14–18: Leuven, Belgium. **40th Conference of the International Society for Clinical Biostatistics** w http://www.icsb.info

NEW July 15–17: Lisbon, Portugal. **ECAS2019: Statistical Analysis for Space–Time Data** w https://ecas2019.math.tecnico.ulisboa.pt/

July 15–19: Valencia, Spain. **ICIAM 2019** w https://iciam2019.org/index.php

NEW July 15–19: Samos, Greece. **9th International Conference on Lévy Processes** w https://actuarweb.aegean.gr/levy2019/

July 22–26: Palermo, Italy. **European Meeting of Statisticians 2019** w http://www.ems2019.palermo.it

July 23–25: Kuantan, Malaysia. **2nd International Conference on Applied & Industrial Mathematics and Statistics 2019 (ICoAIMS 2019)** w http://icoaims.ump.edu.my/index.php/en/

July 27–August 1: Denver, CO, USA. **IMS Annual Meeting at JSM 2019** w https://ww2.amstat.org/meetings/jsm/2019/

August 2019

August 17–19: St. Louis, USA. **4th Workshop on Higher-Order Asymptotics and Post-Selection Inference (WHOA-PSI)** w https://www.math.wustl.edu/~kuffner/WHOA-PSI-4.html

August 18–23: Kuala Lumpur, Malaysia. **ISI2019: 62nd International Statistical Institute World Statistics Congress 2019** w http://www.isi2019.org/

September 2019

NEW September 20–21: Ann Arbor, MI, USA. **U-M Statistics: 50th Anniversary Symposium** w https://sites.lsa.umich.edu/stats-50th-anniversary/

September 22–26: Hannover, Germany. **29th European Safety and Reliability Conference (ESREL 2019)** w https://esrel2019.org/

September 23–25: Washington DC. **ASA Biopharmaceutical Section: Regulatory-Industry Statistics Workshop** w https://ww2.amstat.org/meetings/biop/2019/

October 2019

October 3–5: Bellevue, WA, USA. **2019 Women in Statistics and Data Science Conference** w https://ww2.amstat.org/meetings/wsds/2019

October 10–12: Grand Rapids, USA. **3rd International Conference on Statistical Distributions and Applications (ICOSDA 2019)** w http://people.cst.cmich.edu/lee1c/icosda2019/

October 17–19: Knoxville, TN, USA. **Design and Analysis of Experiments** w https://haslam.utk.edu/dae2019

November 2019

NEW November 4–5: Boston, MA, USA. **Quantitative Challenges in Cancer Immunology and Immunotherapy** w https://www.hsph.harvard.edu/2019-pqg-conference/

November 15: Boston, MA, USA. **Statistics and the Life Sciences: Creating a Healthier World** w TBD

December 2019

December 2–6: Mérida, México. **XV CLAPEM: Latin American Congress of Probability and Mathematical Statistics** w http://clapem2019.eventos.cimat.mx/

NEW December 26–30: Mumbai, India. **INDSTATS2019: "Innovations iN Data and Statistical Sciences"** w http://www.intindstat.org/IISA2019

January 2020

January 6–8: San Diego, CA, USA. **International Conference on Health Policy Statistics (ICHPS)** w http://ww2.amstat.org/meetings/ices/2020/index.cfm

February 2020

February 20–22: Sacramento, CA, USA. **Conference on Statistical Practice 2020** w https://ww2.amstat.org/meetings/csp/2020/

March 2020

March 22–25: Nashville, TN, USA. **ENAR Spring Meeting** w http://www.enar.org/meetings/future.cfm

June 2020

June 15–18: New Orleans, LA, USA. **Sixth International Conference on Establishment Statistics (ICES-VI)** w http://ww2.amstat.org/meetings/ices/2020/

June 22–26: Sydney, Australia. **International Statistical Ecology Conference (ISEC2020)** w http://www.isec2020.org/

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International Calendar *continued*

June 2020 *continued*

June 24–27: Brno, Czech Republic. **Fifth International Workshop on Functional and Operatorial Statistics** (IWFOS 2020) **w** https://iwfos2020.sci.muni.cz/

NEW June 29–July 3: Nový Smokovec, Slovakia. **LinStat 2020** **w** https://linstat2020.science.upjs.sk/

July 2020

July 5–11: Portoroz, Slovenia. **8th European Congress of Mathematics. w** http://www.8ecm.si/

July 6–10: Gold Coast, QLD, Australia. **2020 Australian and New Zealand Statistical Conference** (ANZSC 2020) **w** https://anzsc2020.com.au

July 6–10: Seoul, South Korea. **30th International Biometric Conference** (IBC2020) **w** https://www.biometricsociety.org/2018/07/ibc-2020-seoul-preview/

August 2020

ims August 1–6: Philadelphia, PA, USA. **JSM 2020 w** http://www.amstat.org/ASA/Meetings/Joint-Statistical-Meetings.aspx

ims August 17–21: Seoul, Korea. **Bernoulli/IMS World Congress in Probability and Statistics w [NEW]** http://www.wc2020.org

March 2021

ims March 14–17: Baltimore, MD, USA. **ENAR Spring Meeting** **w** http://www.enar.org/meetings/future.cfm

August 2021

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

March 2022

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

July 2022

ims July/August: Location TBC. **IMS Annual Meeting w** TBC

NEW July 10–15: Riga, Latvia. **XXXI International Biometric Conference** (IBC 2022) **w** https://www.biometricsociety.org/meetings-events/ibcs/

August 2022

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

August 2023

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

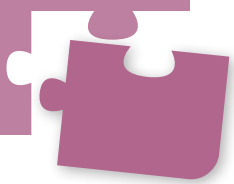
August 2024

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

August 2025

ims August 2–7: Nashville, TN, USA. **IMS Annual Meeting at JSM 2025 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/



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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

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August 2019

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July 1, then
August 15

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Articles

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