Volume 44 • Issue 5

IMS Bulletin

August 2015

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Election results announced

Jon Wellner President-Elect

We are pleased to announce the results of the 2015 IMS Council elections.

The President-Elect is Jon Wellner. The new Council members are, in alphabetical order: Andreas Buja, Gerda Claeskens, Nancy Heckman, Kavita Ramanan and Ming Yuan.

The new Council members and President-Elect will serve IMS for three years, starting officially at the IMS Business Meeting, held this year at JSM Seattle. They will join the following Council members: Rick Durrett, Steffen Lauritzen, Susan Murphy, Jonathan Taylor and Jane-Ling Wang (who are on Council for a further year), and Peter Bühlmann, Florentina Bunea, Geoffrey Grimmett, Aad van der Vaart and Naisyin Wang (whose terms last until August 2017).

The new IMS Executive Committee will be Richard Davis (President), Erwin Bolthausen (Past President), Jon Wellner (President-Elect), Jean Opsomer (Treasurer), Judith Rousseau (Program Secretary), and Aurore Delaigle (Executive Secretary). Former President Bin Yu will leave the Executive Committee this year.

The new Council members will replace Alison Etheridge, Xiao-Li Meng, Nancy Reid, Richard Samworth and Ofer Zeitouni.

Serving the statistics and probability community in this way is an often thankless and largely invisible task. We express our gratitude to all those who give their time and energy to assist the IMS. Thanks too, to those who also stood for election this year. And finally, thanks to all IMS members who took the time to vote!

These are the new IMS Council members. They represent you!

Thanks for voting

Andreas Buja Council 2015–18

Gerda Claeskens Council 2015–18

Nancy Heckman Council 2015–18

Kavita Ramanan Council 2015–18

Ming Yuan Council 2015–18

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Contact information

IMS Bulletin Editor: Anirban DasGupta
Assistant Editor: Tati Howell
Contributing Editors: Robert Adler, Peter Bickel, Stéphane Boucheron, David Hand, Vlada Limic, Xiao-Li Meng, Dimitris Politis, Terry Speed and Hadley Wickham

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e bulletin@imstat.org
w http://bulletin.imstat.org
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IMS Dues and Subscriptions Office
9650 Rockville Pike, Suite L3503A
Bethesda, MD 20814-3998
USA

t 877-557-4674 [*toll-free in USA*]
t +1 216 295 5661 [*international*]
f +1 301 634 7099
e staff@imstat.org

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Executive Director, Elyse Gustafson
IMS Business Office
PO Box 22718, Beachwood
OH 44122, USA

t 877-557-4674 [*toll-free in USA*]
t +1 216 295 5661 [*international*]
f +1 216 295 5661
e erg@imstat.org

Executive Committee

IMS Members' News

Sharon-Lise Normand receives Cupples Award

The 2015 L. Adrienne Cupples Award for Excellence in Teaching, Research and Service in Biostatistics has been awarded to Sharon-Lise Normand, professor of biostatistics at Harvard Medical School and Harvard's T.H. Chan School of Public Health.

Dr. Normand delivered a presentation, *Approaches to Comparative Effectiveness Estimation in Prospective Observational Data*. Dr. Normand received the award for her research on the development of statistical methods for health services research, and for her inquiries into methods for the analysis of patterns of treatment and quality of care for patients with cardiovascular disease and with mental disorders. Her research also focuses on the development of statistical methods for health services research, primarily using Bayesian approaches to problem solving, including assessment of quality of care, methods for causal inference, provider profiling, meta-analysis, and latent variable modeling.

Sharon-Lise Normand, left, accepts award from L. Adrienne Cupples, SPH professor of biostatistics.

She has also been a leader in the development of methods for the analysis of patterns of treatment and quality of care for patients with cardiovascular disease and with mental disorders. Prof. Normand's more than 290 peer-reviewed publications have appeared in top journals and had a demonstrable impact on policy and the field. She has served as President of the Eastern North American Region of the International Biometrics Society, is a Fellow of the American Heart Association and the recipient of the American Statistical Association Health Policy Statistics Section's Long Term Excellence Award.

The annual L. Adrienne Cupples Award honors a biostatistician whose academic achievements reflect the contributions to teaching, research, and service exemplified by SPH Professor L. Adrienne Cupples. Dr. Cupples joined the SPH faculty in 1981 and later served as founding Chair of the Department of Biostatistics and Co-Executive Director of the Graduate Program in Biostatistics. During her tenure at BUSPH, she has advanced the field of biostatistics through extensive publications in major journals and book chapters on collaborative and methodological research, development and effective teaching of a wide range of biostatistics courses, and mentorship of numerous graduate students and faculty.

To be eligible for the Cupples Award—which includes a $1,000 honorarium—the nominee must be an internationally recognized statistician/biostatistician who has made significant contributions to the statistical sciences through teaching, research, and service.

David Cox, Nancy Reid honored at Rao Conference

At the 2015 Rao Prize Conference in May 2015, two IMS Fellows were honored. Sir David R. Cox, Professor Emeritus of Statistics and Honorary Fellow of Nuffield College at the University of Oxford, received the 2015 C. R. and Bhargavi Rao Prize. The 2015 P.R. Krishnaiah Lecturer was Nancy M. Reid, the University Professor of Statistical Sciences at University of Toronto. You can read more about the conference at Penn State on page 4.

IMS Members' News

Gunnar Kulldorff, 1927–2015


Gunnar Kulldorff

Gunnar Kulldorff, a Fellow and long time member of IMS, passed away in Umeå, Sweden, on Thursday June 25. He was Professor emeritus in the Department of Mathematics and Mathematical Statistics at Umeå University. Gunnar received his PhD from Lund University in 1961, on "Contributions to the Theory of Estimation from Grouped and Partially Grouped Samples."

An obituary will follow in a future issue.


Ramanathan Gnanadesikan. Photo courtesy of Chhaya Werner

Ramanathan Gnanadesikan, 1932–2015

We have also just learned of the death of IMS Fellow and former President Ramanathan Gnanadesikan, who passed away on 6 July 2015. Ram received his PhD from the University of North Carolina. At Bell Labs for many years, and then at BellCore, he conducted research in data analysis methodologies, especially multivariate techniques including graphical and robust/resistant methods. He was a fellow of AAAS, ASA, IMS and RSS, and an Elected Member of the International Statistical Institute; he had also served as president of the International Association for Statistical Computing. Ram received the 2009 Jerome Sacks Award for Cross Disciplinary Research. An obituary will follow in a future issue.

Nitis Mukhopadhyay 2015 Don Owen Award

The 2015 Don Owen Award, given by the ASA San Antonio Chapter, was presented to Nitis Mukhopadhyay by chapter president Jesus Cuellar Fuentes April 10 at the Conference of Texas Statisticians.

Nitis Mukhopadhyay is a professor in the department of statistics at the University of Connecticut in Storrs. He earned his doctorate from the Indian Statistical Institute in 1975, and then taught for six years in the department of statistics at Oklahoma State University in Stillwater. He joined the University of Connecticut in 1985. Nitis has authored six books, 14 book chapters, and more than 215 refereed research articles. His research includes sequential analysis and multistage sampling and selection and ranking. He was a project director for the Distinguished Statisticians film series for more than 20 years and the author of many interviews appearing in *Statistical Science*.

Hao Zhang heads Purdue Statistics Department

Professor Hao Zhang has been appointed the Head of the department of Statistics at Purdue University with effect from July 1, 2015. He succeeds Professor Rebecca Doerge. Professor Zhang is a PhD from Michigan State University, and works on martingales, spatial and geostatistics, point processes, spatio-temporal models, ecological statistics, and forestry.

Xuming He new chair of Michigan Statistics Dept

Effective July 1, 2015, former *Bulletin* editor Xuming He serves as Chair of the Department of Statistics, University of Michigan. He will also be 2016 Chair-Elect of the Nonparametric Statistics Section of the American Statistical Association.

Rao Prize Conference

The Penn State Department of Statistics held the 2015 Rao Prize Conference on May 14, 2015 to honor three prize recipients: the 2015 C. R. and Bhargavi Rao Prize Recipient **Sir David R. Cox**, Professor Emeritus of Statistics and Honorary Fellow of Nuffield College at University of Oxford; the 2015 P. R. Krishnaiah Lecturer **Nancy M. Reid**, the University Professor of Statistical Sciences at University of Toronto; and the 2015 C. G. Khatri Lecturer **Vijay V. Raghavan**, the Alfred and Helen Lamson Endowed Professor in Computer Science at University of Louisiana at Lafayette. There were about 100 researchers attending this conference.

The conference program consisted of three plenary speakers, four invited speakers, and a poster presentation by postdocs and graduate students. The plenary speakers were Cox, Reid, and Raghavan. The invited speakers were Professors **Aurore Delaigle** of the University of Melbourne, **Bing Li** of Penn State, **Runze Li** of Penn State, and **Jeffrey Racine** of McMaster University.

One of the highlights of the conference was the award of the 2015 Rao Prize to Sir David R. Cox. Cox is an elected Fellow of the Royal Society of London, Honorary Fellow of the British Academy, Foreign Associate of the US National Academy of Sciences, Foreign Honorary Member of the American Academy of Arts and Sciences, Foreign Member of the Royal Danish Academy of Sciences and Letters, Foreign Member of the Indian National Academy of Science, and Foreign Associate of the Indian Academy of Science. He is a winner of the Royal Statistical Society's Guy Medals in Silver (1961) and in Gold (1973), the Kettering Prize and Gold Medal for Cancer Research in 1990, and the Copley Medal of the Royal Society in 2010. He was knighted by Queen Elizabeth II in 1985. He was editor of *Biometrika* from 1966 to 1991. He has served as president of the Bernoulli Society, of the Royal Statistical Society, and of the International Statistical Institute. He has received honorary doctoral degrees from Harvard University, Oxford University, the University of Minnesota, the University of Toronto, Waterloo University, and many others.

David Cox giving the 2015 C.R. and Bhargavi Rao Lecture

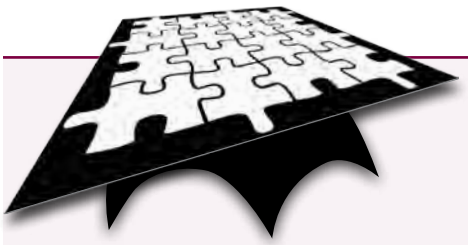
This conference also highlighted the 2015 P. R. Krishnaiah Lecturer Nancy M. Reid and the 2015 C. G. Khatri Lecturer Vijay V. Raghavan. Reid is an elected Fellow of the Royal Society of Canada, and a recipient of the Committee of Presidents of Statistical Societies Presidents' Award in 1992, the Krieger-Nelson Prize in 1995, the Statistical Society of Canada Gold Medal in 2009, and the Statistical Society of Canada Distinguished Service Award in 2013. Raghavan is a recipient of the Web Intelligence Consortium Outstanding Service Award, the Association for Computing Machinery Distinguished Scientist Award, and the IEEE Intentional Conference on Data Mining Outstanding Service Award.

The C.R. and Bhargavi Rao Prize was established to honor and recognize outstanding and influential innovations in the theory and practice of mathematical statistics, international leadership in directing statistics research, and pioneering contributions by a recognized leader in the field of statistics. The C. G. Khatri Memorial Lectureship and P. R. Krishnaiah Memorial Lectureship honor the memory of C. G. Khatri and P. R. Krishnaiah by inviting outstanding researchers in statistics to deliver lectures at Penn State. More details about the conference can be found on the web at http://stat.psu.edu/Events/2015-Rao-Prize.

Nancy Reid (right) with C.R. Rao

Aurore Delaigle and Monia Rinalli at the poster session

Runze Li, C.R.Rao, Zhanxiong Xu and Ningtao Wang



Student Puzzle Corner 10

The *Student Puzzle Corner* contains one or two problems in statistics or probability. Sometimes, solving the problems may require a literature search.

Current student members of the IMS are invited to submit solutions electronically (to **bulletin@imstat.org with subject "Student Puzzle Corner"**). The deadline is **August 10, 2015.**

The names and affiliations of (up to) the first 10 student members to submit correct solutions, and the answer to the problem, will be published in the next issue of the *Bulletin*.

The Editor's decision is final.

In this issue, we look at the consequences of having only incomplete data. For example, suppose a random variable X has a normal distribution with mean μ and variance σ^2, and both parameters need to be estimated. With usual data, which we call complete data, namely iid copies $X_1, X_2, \cdots, X_n$ of X, we can estimate μ and σ^2 easily; $\bar{X}$ and s^2 are consistent and fully efficient. But, if we only have the maximum and the minimum of the X_i's, then although we can still estimate μ and σ^2 consistently, we can no longer estimate them efficiently. This is the price we pay for only having incomplete data. In some cases, data may be so incomplete that even consistent estimation of a parameter may be impossible. Here is the exact problem of this issue:

For each of the following cases, either prove that consistent estimation of the indicated parameter is not possible, or demonstrate a concrete consistent estimate of the indicated parameter:

(a) $X_i \overset{\text{iid}}{\sim} N(\mu, 1)$, $i = 1, 2, \cdots, n$, $-\infty<\mu<\infty$, and we get to observe only Y_i, $i = 1, 2, \cdots, n$, where $Y_i = |X_i|$; we want to estimate μ;

(b) $X_i \overset{\text{iid}}{\sim} \text{Poisson}(\lambda)$, $i = 1, 2, \cdots, n$, $0<\lambda<\infty$, and we get to observe only whether each X_i is larger than k or $\le k$ for some fixed specified positive integer k; we want to estimate λ;

(c) X_i, $i = 1, 2, \cdots, n$ are iid exponential with mean λ, $0<\lambda<\infty$, and we get to observe only the fractional parts of the X_i's; we want to estimate λ.

Solution to Student Puzzle Corner 9

Bulletin Editor Anirban DasGupta writes:

Well done to Yixin Wang of Columbia University, who sent correct answers to all three parts (although fuller answers are encouraged).

The problem asked was to characterize the set of recurrence points of three d-dimensional random walks with step distributions F:

Yixin Wang submitted a correct answer

(a) $d = 1$, F = the two point distribution with $P(X_i = \pm 1) = \frac{1}{2}$

(b) $d = 2$, F = the uniform distribution inside the unit two-dimensional ball

(c) d = 3, F = the trivariate standard normal distribution.

Recall that a specific point $\mathbf{x}$ is called a recurrence point of the random walk S_n if for any $\epsilon > 0$, $P(||S_n - \mathbf{x}|| < \epsilon$ for infinitely many $\mathbf{n}) = \mathbf{1}$. In contrast, a specific point $\mathbf{x}$ is called a possible point of the random walk S_n if for any $\epsilon > 0$, $\exists N \ni P(||S_N - \mathbf{x}|| < \epsilon) > \mathbf{0}$.

Here are three facts that are useful in studying recurrence points of a general d-dimensional random walk:

1. The set of recurrence points of a d-dimensional random walk is either the empty set or equals the set of all possible points of the random walk.
2. Fix $0 < r < 1$. The set of recurrence points of a d-dimensional random walk S_n is nonempty (and hence, equals the set of its possible points) if and only if $\sum_{n=1}^{\infty} P(||S_n|| < r) = \infty$.
3. Let $\varphi(t)$ denote the cf (characteristic function) of the step distribution F of a d-dimensional random walk. Suppose F is symmetric around the origin, i.e., $P(A) = P(-A)$ for all (measurable) sets A under F. Then, the set of recurrence points of S_n is nonempty if and only if

$$\int_{(-1,1)^d} \frac{1}{1 - \varphi(t)}\, dt = \infty.$$

Fact 3 is sometimes easier to verify than Fact 2, although they

The solution continues on **page 10**

IMS Fellows: a little history

In the last issue, we announced the latest additions to the prestigious list of IMS Fellows, now numbering 1,098. Paul Shaman delves deeper into the history of IMS Fellows, and reveals some interesting characters among them:

At its founding in 1935, the IMS constitution stipulated:

> Membership in the Institute shall consist of Members, Fellows, Honorary Members, and Sustaining Members

(*Ann. Math. Statist.*, Vol. 6, p. 227).

Initially, in 1935, three persons, Burton H. Camp, Arthur H. Crathorne, and Harold Hotelling, were named Fellows. To date 1,098 persons have received the designation of Fellow. They are a diverse group, including statisticians, probabilists, mathematicians, economists, engineers, geneticists, psychologists, actuaries, and even a US Army Major General.

IMS Fellows have received multiple honors. Five have been named Nobel Laureates and one has received the Abel Prize. Fourteen have received the National Medal of Science, one the National Medal of Technology and Innovation, and two the Presidential Medal of Freedom. Five Fellows have been knighted. Thirty-five have been elected to the Royal Society, ten to the British Academy, and 17 to the Royal Society of Edinburgh. Seventy-eight have been elected to the National Academy of Sciences, 15 to the National Academy of Engineering, three to the Institute of Medicine, 96 to the American Academy of Arts and Sciences, and 17 to the American Philosophical Society. Many have been elected to other academies, including the Australian Academy of Sciences, the Royal Society of Canada, the French Academy of Sciences (Académie des sciences), the Indian Academy of Sciences and the Indian National Science Academy.

Each year a new slate of Fellows is chosen. Nominations for Fellowship are considered by the IMS Fellows Committee. Currently, candidates for Fellowship should be members of IMS on December 1 of the year preceding their nomination, and should have been members of the IMS for at least two years. At present, the Fellows Committee has twelve members, each serving a three-year term. The terms are staggered, so that four new members are designated each year.

Prior to 1943, 40 persons had been named Fellows. By 1970, 307 Fellows had been designated.

The number of Fellows named yearly has varied considerably. Since 1971 the minimum has been seven, and the maximum an unusually high 38 (in 1984). The median for this period is 17, and the first and third quartiles are 13 and 20.5, respectively. If the 1984 figure is discarded, the remaining 44 counts are nicely described by a normal distribution with mean 16.86 and standard deviation 5.17. The numbers for 2011–2015 have been 18, 17, 19, 9, and 17.

Interesting Fellows

There are interesting facts about some of the Fellows. James A. Shohat was an uncle of composer Dmitri Shostakovich. Harold Hotelling's second wife was a descendant of Francis Scott Key, who wrote the lyrics to the US national anthem, and of Sir Francis Wyatt, the first English royal governor of Virginia. Patrick Billingsley was a stage, screen, and television actor. He starred in numerous productions at Court Theatre and Body Politic Theatre in Chicago. His credits included eight movies—among them *The Fury*, *Somewhere in Time*, and *The Untouchables*—and a number of television shows. Carl-Erik Särndal has several times set world records in the high jump for masters in his age category. On January 20, 2013, he cleared 1.52 meters, bettering the mark of the previous record holder in the age 75 and older category by 11 centimeters. The Major General was Leslie E. Simon, who served as Director of the Ballistic Research Laboratory at Aberdeen Proving Ground in Maryland. Simon was well-known as the author of the book *German Research in World War II*. He also wrote *An Engineer's Manual of Statistical Methods*, published in 1941 by Wiley. Simon was named an IMS Fellow in 1943, became a Fellow of the American Academy of Arts and Sciences in 1956, was the first recipient, in 1948, of the Shewhart Medal from the American Society of Quality, and received the Wilks Award from the American Statistical Association in 1966.

New IMS Fellows website launching soon

A web site devoted to the accomplishments and biographies of the IMS Fellows will be launched soon. The IMS Scientific Legacy Fund supports the development and maintenance of web pages for the site. Contributions may be made at https://secure.imstat.org/secure/orders/donations.asp.

Read more about our Fellows

You can read a more extensive list of the achievements of Fellows of the Institute of Mathematical Statistics in the online version of this article, at http://bulletin.imstat.org /2015/07/ims-fellows-a-little-history/

XL-Files: The ABC of Wine and of Statistics?

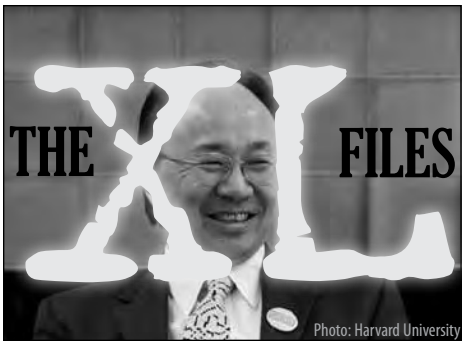


Photo: Harvard University

Xiao-Li Meng gives some advice to a student in a conundrum.

After the final exam of my first Gen. Ed. course, *Real-life Statistics: Your Chance for Happiness (or Misery)*, a student insisted on seeing me. Given the course title, I thought I would hear about his misery—likely about the final. Instead, he delighted me with two questions: "How should I invest my income for retirement?" and, "What wine should I choose for the graduation celebration dinner with my parents?" At least one student took my teaching (too) seriously!

The happy course had five modules: *Finance, Romance, Medical, Legal,* and *Wine and Chocolate*. The beauty of starting with the finance module is that *mean* becomes *expected return*, and *variance* is replaced by *volatility*. Introducing technical terms via real-life/substantive realizations is pedagogically effective, but it does raise the expectation that the lecturer must know something about the said substantive field. Having been a very poor (no pun intended) investor myself, I only had one answer to his first question: "You need to retain a professional."

That could easily be my answer to his second question as well. But I doubted he would consider choosing wine for a dinner a serious enough business to call on a professional. Besides, what would a professional say in such cases? I face a similar quandary about how to respond to (frequent) questions such as, "I need to analyze this data set but I don't know anything about statistics. Can you tell me how to do it?" This could be an innocent inquiry from a curious mind eager to enter the magic kingdom of statistics. But it could also represent an annoyingly arrogant belief that statistical analysis amounts to a few pedestrian rules easily explainable to, and implementable by, anyone.

In the same vein, a wine snob may find his second question annoying: "How could I possibly answer that? At least you need to tell me what kind of wine your parents like? What food will you be having? How much money do you want to spend?" These are all reasonable questions from a connoisseur's perspective, but one must be mindful that what makes someone a novice is his/her inability to ask the right questions. Perhaps my student never realized the food–wine interaction, much like statistical novices typically do not appreciate the dependence of statistical methods on the problems targeted. Ignorance naturally expects homogeneity, because appreciating heterogeneity requires nuanced knowledge.

Trying to answer every such question with professional rigor is neither necessary nor practical: just think about the time needed to understand any actual data collection process. My student merely wanted to pick up a reasonable bottle, and many people who have asked me "how to do it" just wanted some quick-and-dirty ways to get their projects done. Refusing to answer may minimize our professional risk, but it also minimizes our opportunity to educate and to influence. Therefore, the challenge I periodically pose to myself is how to provide *ballpark-right* answers to a sincere novice question like that of my student—answers that are easy to remember and implement, not terribly sensitive to conditions the novices are blissfully oblivious to, and yet, *statistically speaking*, not completely useless or utterly misleading.

Having invested more in relaxation than in retirement, I felt comfortable offering an ABC rule to my student: "Get an *Average-priced, Blended, California* wine." For novices, price is the easiest criterion for choosing wine. But finding a good bargain requires knowledge that novices do not possess; the same is true for buying expensive wines, especially given the nonlinear dependence between quality (and personal preferences) and price at the high end. Grape varietals mean far less to novices than to connoisseurs, and blended wines (often red) are safer because they tend to be fruity enough to please many occasional consumers, but not overwhelmingly so to offend serious connoisseurs. Finally, whereas many wine aficionados profess more loyalty to their winemakers than to their friends or loved ones, I find that California wine generally has relatively smaller variance in quality and rarely becomes "an acquired taste."

In the eyes of professional winemakers, wine is no less a subtle subject than statistics—indeed much of high-end wine making is about creating unquantifiable subtleties and complexities. Therefore, any simplistic ABC rule must be very offensive to my enological friends ("Xiao-Li, how dare you ignore the entire Old World?"). To be fair to my statistical friends, I must then propose an equally if not more offensive ABC rule for statistical novices: "*Averaging* when you have more than one alike, *Bootstrapping* when you want more than one alike, and *Correlating* when you have more than one unalike." Of course, this one requires a good bottle to go with it, especially if you are professionally enraged ("Xiao-Li, how dare you recommend *averaging* without any qualification?").

So, do you prefer a white or a red *Conundrum*?

Disclaimer: IMS takes no responsibility for your wine intake!

Obituary: Peter W M John

1923–2015

Peter John

Peter William Meredith John passed away on January 22, 2015 at the age of 91. He is survived by his wife Elizabeth of 61 years, a daughter, a son, and two grandchildren. He will be remembered by friends and family for his warmth, kindness and humor and by his colleagues for his many valuable contributions to the Design of Experiments.

Peter John was born on August 20, 1923 in Porthcawl, Wales. In 1941, Peter won a scholarship in mathematics to Jesus College, Oxford, and later, after enlisting in the Royal Air Force, spent additional months at Oxford learning advanced physics and using that knowledge in support of the war effort.

He finished his BA in 1944 and next completed a new post-graduate diploma program (now called the MSc) in statistics.

In 1948, he came to the USA as an instructor at the University of Oklahoma. He stayed for further graduate study in mathematics, and received his PhD in 1955, writing a dissertation on birth and death processes.

Peter next accepted a position at the University of New Mexico, but left after two years to become a Research Statistician at the Chevron Research Corporation. One attraction was that Henry Scheffé was a consultant there.

Henry Scheffé used to say that consulting gave him a wonderful source of problems. Henry told Peter that there are new research problems lurking everywhere. You can hardly avoid stumbling over several, so long as you are inquisitive enough, persistent enough, or lucky enough, to spot them. Peter took this advice to heart and many of his contributions came from industrial problems he was confronted with at Chevron and at the Gordon Research Conferences on Statistics in Chemistry and Chemical Engineering, and later as a consultant to the semiconductor industry.

One example came when a client wanted to do a 2^3 factorial experiment (eight points). But when the raw material arrived, there was only enough for six runs. Peter knew what to do with eight runs and four runs. But what could be done with six runs? Out of this came the resolution V design for four factors in twelve runs and, in 1962, Peter published the general theory of three-quarter replicates. These designs are often known as John's ¾ fractional factorial designs.

Another example occurred working with an engineer on a 24 factorial: sixteen runs in two weeks. Following established procedure, the run order was carefully randomized. However, the machinery broke down after the first week and there were only eight runs. Eight runs chosen at random from sixteen are a mess. So why not design the experiment to give insurance against early termination? It would have been much better if the run order wasn't randomized. Peter worked out that the first eight points should have been one of the two resolution IV half-replicates. Then, the next four points could make a twelve point fraction of resolution V, and, if all went well, the final four points would complete the full factorial.

In 1967, Peter John accepted a professorship in the mathematics department at the University of Texas at Austin. His book *Statistical Design and Analysis of Experiments* was published by Macmillan in 1971 and was republished in 1998 in the Society of Industrial and Applied Mathematics' series "Classics in Applied Mathematics". Peter then pursued research in incomplete block designs, publishing a book on that subject in 1980. In the eighties, his talents with experimental design led him to work with the semiconductor industry and the quality assurance movement, resulting in another book, *Statistical Methods in Engineering and Quality Assurance*, in 1990.

Peter published over 60 refereed papers. He was elected a Fellow of the American Statistical Association (1976), the Institute of Mathematical Statistics (1977) and later the Royal Statistical Society. In 1991, he was awarded the Shewell Prize of the American Society for Quality Control.

While at the University of Texas, Peter developed a reputation as an excellent teacher. In his career he supervised thirteen PhD students and more than 60 MA students. In 1999, he received an Award for Outstanding Teaching in the Graduate School.

A former PhD student of Peter's, introducing him as the Keynote Speaker and Guest of Honor at a Quality and Productivity Research Conference in 2003, had this to say: "I had two requirements for my dissertation advisor: the topic had to be interesting and my advisor just *had* to be a decent person. With Peter, I found both."

Written by Paul Tobias, Statistical Consultant

Obituary: Bruce Lindsay

1947–2015

Bruce Lindsay in Halkidiki, Greece

Bruce G. Lindsay, 68, passed away at home, surrounded by his family, on the morning of May 5.

Bruce was holder of the Eberly Family Chair in Statistics at Penn State University, where he joined the faculty as an assistant professor in 1979 after completing a postdoctoral fellowship at Imperial College London. He spent his entire 36-year career at Penn State, where he was promoted to associate professor in 1985, professor in 1987, and distinguished professor in 1991. He served as the head of Penn State's Department of Statistics from 2006 to 2012.

Bruce gave the prestigious Fisher Lecture at the 2010 Joint Statistical Meetings, a talk that highlighted his capacity for deep geometric insights and his uncanny knack for explaining difficult ideas simply. He was a fellow of the IMS and the ASA and an elected member of the ISI, as well as a past winner of a Guggenheim fellowship and a Humboldt Senior Scientist Research Award. Bruce's first PhD student, Kathryn Roeder, was the winner of the 1997 COPSS Presidents' Award, and all told Bruce served as the advisor to 31 PhD students over the course of his career.

Bruce made fundamental contributions to many areas of statistical theory, and along with his collaborators he applied these ideas to solve important problems arising in multiple fields, including longitudinal data, genomics, environmental data, machine learning, model selection, and massive datasets. His 1995 monograph on mixture models is one-of-a-kind, detailing his pioneering work on the theory of nonparametric maximum likelihood for mixture models and establishing a general geometric theory for the study of mixtures that he later extended in several ways. Bruce showed how his work in mixtures can also be generalized to semiparametric models such as the Rasch model and the measurement error model, increasing their flexibility. He developed a general framework for composite likelihood methods and extended the generalized method of moments to GEE models, providing a unified method for parameter inference and testing, as well as goodness of fit, which simplifies many intractable situations while also increasing efficiency. He advanced the theory of model assessment and distance-based estimation. And he devised a conditional score function useful for reducing nuisance parameter bias and extended this method to approximate conditional scores when exact scores do not exist. Deep and imaginative breakthroughs like these, which continue to have a profound effect on the theory and practice of statistics, characterized Bruce's productive career.

Bruce was born in 1947 in The Dalles, Oregon. After graduating from The Dalles High School in 1965, he took his love of learning to the University of Oregon, where he earned a bachelor's degree in mathematics in 1969. He intended to go on immediately to earn his doctoral degree, but the Vietnam War and its required military service intervened. Following a four-year stint in the Coast Guard, spent primarily in Petaluma, California, Bruce achieved his goal and earned a doctoral degree in biomathematics in 1978 from the University of Washington, with Norm Breslow as his advisor.

Soon after graduating, Bruce was offered a postdoctoral fellowship to spend a year at Imperial College London working with Sir David Cox. The small-town boy from The Dalles, Oregon, was thrilled. He, his first wife Teresa Goff, and their six-year-old son Dylan, packed up and headed off to soak up all that London and England had to offer. They came home a year later with their second son Camden on the way. Bruce had caught the bug for travel: Over the course of his career, he held temporary academic positions in Berlin, Victoria (BC), Auckland, Bath, Venice, Rome, Southampton, Glasgow, and Perugia along with several in the United States at Johns Hopkins, Cornell, Yale, and NC State. Bruce's wife Laura Simon, whom he married in 1997, and their daughter Maia, share his love of travel, having accompanied him on all but a few of these ventures.

In addition to travelling and spending time with his family, Bruce loved hiking, reading, opera, and running (he ran five marathons). He was a life-long environmentalist who enjoyed walking or biking to work every day. Those of us who knew him personally and professionally recall him as a fabulous scientist, a wise mentor, a warm and humble human being, and a great friend.

A memorial fund has been established at Penn State to honor Bruce's excellent scholarship and commitment to mentoring graduate students in statistics. If you are interested in making a memorial gift, please make your check out to Penn State University, 27 Old Main, University Park, PA 16802-1500, and write "Bruce Lindsay–Statistics" on the memo line. Any questions may be sent to David Hunter at dhunter@stat.psu.edu.

Written by David Hunter and Laura Simon from Penn State, with help from Bruce's students Kathryn Roeder, Annie Qu and Marianthi Markatou

Solution to Student Puzzle Corner 9 continued

Continued from **page 5**

both characterize when a random walk is recurrent.

Returning now to the problem that was asked, for problem (a), the set of possible points is the set of integers $\{0, \pm 1, \pm 2, \cdots\}$. The random walk S_n can return to zero only for even n, and

$$P(S_{2n} = 0) = \frac{\binom{2n}{n}}{4^n} \sim \frac{1}{\sqrt{n\pi}},$$

by straightforward use of Stirling's approximation. Hence, for $0<r<1$,

$$\sum_{n=1}^{\infty} P(|S_n| < r) = \sum_{n=1}^{\infty} P(S_{2n} = 0) = \sum_{n=1}^{\infty} \frac{1}{\sqrt{n\pi}}(1 + o(1)) = \infty,$$

since $\sum_{n=1}^{\infty} \frac{1}{\sqrt{n}} = \infty$. Therefore, by Fact 1, in the case of problem (a), the set of recurrence points of S_n is equal to the set of all integers.

For problem (b), the set of possible points is $\mathcal{R}^2$. Heuristically, for large n, S_n is approximately a two-dimensional normal with mean zero and covariance matrix cnI, where I is the 2×2 identity matrix and c is a positive constant. Hence,

$$P(||S_n|| < r) = P(||\frac{S_n}{\sqrt{n}}|| < \frac{r}{\sqrt{n}}) \approx \frac{ar^2}{n},$$

where a is a constant. Since $\sum_{n=1}^{\infty} \frac{1}{n} = \infty$, this suggests that $\sum_{n=1}^{\infty} P(||S_n|| < r) = \infty$. Indeed, this is the case and the heuristic argument can be made rigorous. It follows from Fact 2 that for problem (b), the set of recurrence points of S_n is $\mathcal{R}^2$. One may also conclude this by using Fact 3.

For the case of problem (c), consider the d-dimensional random walk with the d-dimensional standard normal step distribution. The cf of F equals $\varphi(t) = e^{-t't/2}$.

Therefore, locally near $\mathbf{t} = \mathbf{0}$, $1 - \varphi(t) = -t't/2$. Now, with S_d denoting the surface area of the unit d-dimensional ball,

$$\int_{t:t't\le 1} \frac{1}{t't}\, dt = S_d \int_0^1 r^{d-3} dr$$

(by transforming to the d-dimensional polar coordinates), which is $< \infty$ if and only if $d \ge 3$. Now note that $\int_{(-1,1)^d} \frac{1}{1-\varphi(t)}\, dt < \infty$ if and only if $\int_{t:t't\le 1} \frac{1}{1-\varphi(t)}\, dt < \infty$. Therefore, by Fact 3, the d-dimensional Gaussian random walk is recurrent in one and two dimensions, and transient in all dimensions higher than two; in particular, for problem (c), the set of recurrence points is the empty set.

Meeting Report: Meta-Analysis Workshop

Shahjahan Khan from the University of Southern Queensland (USQ), Toowoomba, Australia, recently organized this meeting: The School of Agricultural, Computational, and Environmental Sciences; and Division of Research and Innovation of the USQ hosted a workshop on "Statistical Meta-Analysis with Applications" in collaboration with the Statistical Society of Australia Inc. The workshop was held at the newly acquired Ipswich Campus of USQ from 16–17 June, 2015. Professor Bimal Sinha, University of Maryland, Baltimore County, USA and Assoc. Professor Suhail Doi, Australian National University, Canberra, Australia were the two invited presenters.

The organizer of the workshop, Professor Shahjahan Khan of USQ, opened the inaugural session with a brief introduction of the meta-analysis within the systematic review and evidence based decision making process and role of statistical methods in synthesizing data from independent studies. He also highlighted applications of meta-analysis in many fields of medicine, agriculture, education and business, and discussed some the issues related to methods of allocation of weights under various models in the estimation of the common effect size of meta-analysis. Professor Bimal K Sinha started with some motivating real life examples of data leading to the definition of measures of various effect sizes for continuous and binary outcome variables. He covered all commonly used estimators of common effect size and discussed their variance estimators and confidence intervals. He also discussed inference about the common mean of univariate normal distribution, publication bias, vote counting procedures, and heterogeneity issue along with the random effects (RE) model and meta-regression. Professor Suhail Doi highlighted the main purpose of meta-analysis and focused on some of the problems inherent with conventional statistical meta-analysis, especially the issue of unfair redistribution of more weights to smaller studies under the random effects model. Under the title of "Recent advances in the methodology of statistical meta-analysis" he presented the inverse variance heterogeneity (IVhet) estimator as an alternative to the RE model estimator, and introduced quality effect (QE) model estimator based on his recent publications. Through extensive simulation examples he demonstrated the advantages and appropriateness of the new estimators.

Twelve participants ranging from government departments, industry and academia, from Queensland and other parts of Australia, attended the workshop. They were very happy with the presentations and management of the event and thanked USQ and SSAI for organising the valuable workshop.

Obituary: Moshe Shaked

1945–2014


Moshe Shaked

Moshe Shaked, a leading figure in stochastic orders and distribution theory, died unexpectedly on October 28, 2014, in Tucson, Arizona, at the age of 69. Shaked is survived by his wife of 37 years, Edith; his son Tal; his two daughters, Shanna and Lila; his daughter in law, Carrie; his son-in-law, Jasper; and two grandchildren, Zinnia and Zia. He is also survived by his sisters Tamar Sarid, Anat Weiner, his niece Iris Ginzburg, and his nephew Tal Ginzburg.

Moshe Shaked was born on February 21, 1945 in Jerusalem, Israel. His parents immigrated to British Mandate of Palestine from Poland in 1936; the rest of the family remained there and died in the Holocaust in occupied Poland during World War II. Moshe attended the Hebrew University of Jerusalem and received BA *cum laude* in 1967, and MA in 1971. As a student he was quiet, smiling a lot, but rather critical and skeptical of many things, from statistics to politics, as he was throughout his career. Moshe pursued his graduate studies in statistics at the University of Rochester from 1971 to 1975. He received his PhD in statistics under the supervision of Albert W. Marshall in 1975 with a thesis entitled, *On Concepts of Positive Dependence.* After short stays at the University of New Mexico, University of British Columbia and Indiana University, Moshe became an associate professor of mathematics at the University of Arizona in 1981, then, in 1986, a full professor at the same institution, where he remained until his retirement in May 2013, when he became a Professor Emeritus.

Moshe Shaked is world-renowned for his work in applied probability and statistics. He published over 180 papers and three books. Most of the research papers and the books were written jointly with one or more coauthors from a list of over 60 collaborators from all over the world, including some of the most prominent probabilists and statisticians of the era. He became most celebrated internationally for his collection of influential papers on stochastic orders and multivariate dependence. Stochastic ordering refers to comparing random elements in some stochastic sense, and has evolved into a deep field of enormous breadth with ample structures of its own. An early study on stochastic orders involving convex functions can be traced back to the work of the Serbian mathematician Jovan Karamata in 1932. The systematic studies on stochastic orders and their applications to various areas have been intensified since the 1960s, most notably by researchers with interests in reliability theory and queueing theory, and more recently by researchers working in financial risk management. Moshe Shaked's books on stochastic orders, coauthored with George Shanthikumar, became an instant influential classic in the field. The analysis of stochastic orders and exploitation of their deeper properties often lead to breakthroughs in deriving sharp probability inequalities, analyzing dispersion and concentration of probability measures, establishing performance comparison of complex stochastic systems, characterizing stochastic dependence, etc. The growing applications of stochastic orders in statistics, operations research, and risk analysis might not have happened without the advocacy and persistence of Moshe and his colleagues.

Shaked's bibliography also includes pioneering studies on stochastic convexity and on multivariate phase-type distributions, with important applications in reliability modeling and queueing analysis. He made significant contributions to multivariate aging notions and multivariate life distributions, as well as accelerated life tests (inference, non-parametric approach and goodness of fit). Moshe Shaked's interests and contributions are extremely broad; for example, he made a seminal contribution to analyzing scientific activity and truth acquisition in social epistemology.

Moshe Shaked was elected an IMS Fellow in 1986, and served since 1994 on the editorial boards of several probability and statistics journals. Moshe was invited to speak and lecture at numerous international conferences, and he and his wife Edith traveled together a lot professionally. His university retirement did not slow him down, socially or academically; in the summer of 2014, Moshe Shaked and Edith visited Poland for the first time and he delivered a plenary talk at a conference on ordered statistical data in Poznań, sponsored by the Stefan Banach Center.

Throughout his career, Moshe Shaked exemplified the highest standards of scholarship and professionalism. For collaborators, he was generous and accommodating; for his students, he was an inspiring friend. Moshe was an ancient coin enthusiast, a passionate museum-goer, and he was a man of high culture, who also respected and appreciated cultures other than his own. He will be deeply missed by his many colleagues, coauthors, students, and by his family.

Written by Haijun Li, Washington State University, and George Shanthikumar, Purdue University

Recent papers: two IMS-supported journals

Bayesian Analysis Volume 10, No 3, September 2015

Bayesian Analysis is an electronic journal of the International Society for Bayesian Analysis. It seeks to publish a wide range of articles that demonstrate or discuss Bayesian methods in some theoretical or applied context. The journal welcomes submissions involving presentation of new computational and statistical methods; critical reviews and discussions of existing approaches; historical perspectives; description of important scientific or policy application areas; case studies; and methods for experimental design, data collection, data sharing, or data mining.

Access papers at http://projecteuclid.org/euclid.ba

Brazilian Journal of Probability and Statistics Volume 29, No 3, August 2015

The Brazilian Journal of Probability and Statistics is an official publication of the Brazilian Statistical Association and is supported by the Institute of Mathematical Statistics (IMS). Starting in 2012, it will be published four times a year, in February, May, August, and December. The Journal publishes papers in applied probability, applied statistics, computational statistics, mathematical statistics, probability theory and stochastic processes.

Access papers at http://projecteuclid.org/euclid.bjps

Wald Lectures preview: Susan Murphy


Susan Murphy

Susan Murphy is the H.E. Robbins Distinguished University Professor of Statistics & Professor of Psychiatry and a Research Professor at the Institute for Social Research. Her research focuses on improving sequential, individualized, decision making in health, in particular on clinical trial design and data analysis to inform the development of treatment policies (also known as dynamic treatment regimes and adaptive interventions). She is a leading developer of the "Sequential Multiple Assignment Randomized Trial" design which is being used by clinical researchers to develop treatment policies across multiple health domains (e.g., depression, alcoholism, ADHD, substance abuse, HIV treatment, obesity, diabetes, and autism). Susan is currently working as part of several interdisciplinary teams to develop clinical trial designs and learning algorithms for settings in which patient information is collected in real time (e.g. via smart phones or other wearable devices) and treatments can be provided when and wherever needed. Susan is a Fellow of IMS, ASA and the College on Problems in Drug Dependence; she is a former editor of the *Annals of Statistics*, President-Elect of the Bernoulli Society, a member of the US National Academy of Medicine and a 2013 MacArthur Fellow.

Wald I:
Sequential Decision-Making and Personalized Treatment: The future is now!

Tuesday, August 11, 4:00pm, Convention Center Ballroom 6E

In the first Wald Lecture, *Sequential decision making & personalized treatment: the future is now!,* Susan will discuss new experimental designs for use in developing treatment policies in two broad areas: a) guiding expert sequential decision making and b) developing real-time treatment policies delivered via mobile devices. In the former area, each participant may be randomized two or three times, whereas in the latter area each participant may be randomized hundreds or thousands of times during the study. Both of these areas present a number of new challenges to the field of factorial experimental design as well as to the field of clinical trial design.

Wald II:
Offline Data Analysis Methods and Learning Algorithms for Constructing Mobile Treatment Policies

Wednesday, August 12, 10:30am, Convention Center Ballroom 6E

This second Wald Lecture will discuss estimation methods based on experimental or observational data for constructing real-time mobile health treatment policies. Over the last decades much of the research in this area has occurred outside of statistics, namely in the fields of reinforcement learning (an area of machine learning), operations research and in control engineering. As a result many aspects of present methods, in particular estimation methods most useful for health applications as well as inferential methods such as confidence intervals and testing have remained relatively undeveloped. This area presents new challenges for statisticians interested in analysis methods and inferential methods using large, complex data sets (large amounts of data are collected on each participant).

Wald III:
Continual, Online Learning in Sequential Decision-Making

Thursday, August 13, 10:30am, Convention Center Room 4C2

The last Wald Lecture will discuss methods and open problems in on-line personalization of a real-time treatment policy in mobile health. In particular, Susan will discuss proposals for basing the on-line personalization on a "warm-start" real-time treatment policy. These proposals involve the use of stochastic gradient ascent approaches to modifying the warm-start policy so as "personalize" the policy to the individual. She will discuss how learning algorithms may be constrained by scientific demands, the potential role of randomization not only for learning how to improve the warm-start but also for improving treatment effectiveness, how in this setting a learning algorithm is part of the definition of treatment and the challenges this raises. She will also discuss the issue of non-stationarity and the critical need for a new theoretical approach for developing and evaluating learning algorithms in non-stationary settings. This area presents new challenges to the field of statistical sequential analysis.

Nominate an IMS Named or Medallion Lecturer

The IMS Committee on Special Lectures is accepting nominations for IMS Named and Medallion Lectures. Available for nomination this year are the 2017 Wald and Neyman Lecturers, and the 2018 Medallion Lecturers. See instructions at http://imstat.org/awards/lectures/nominations.htm. The deadline for nominations is October 1, 2015.

Terence's Stuff: *Omne Trium Perfectum*

"All things that come in threes are perfect." Is it true that good things come in threes? Terry Speed explains why he likes triads.

I like things that come in threes, one of my favourites being the three elements we might consider before a defendant can be regarded as guilty of a crime: did he or she have the *means, motive, and opportunity*? Or, that a good story has *a beginning, middle and end*. Or, that one recipe for a good talk is that *you tell 'em what you are going to tell 'em, then you tell 'em, then you tell 'em what you told 'em.*

I was recently in a discussion about ways of evaluating assays "composed of, or derived from, multiple molecular measurements and interpreted by a fully specified computational model to produce a clinically actionable result." For example, we might take some cells from a tumor biopsy, measure the expression of many genes in those cells using a microarray or DNA sequencing, and then use a procedure based on that data to predict whether the patients in some class can forgo chemotherapy. (The desirability of avoiding unnecessary chemotherapy hardly needs explaining.)

How do we tell whether this test is worthwhile—that is, whether you or your insurer or your government should pay for it to be carried out on your tumor biopsy?

A point of view with which I have a lot of sympathy is that the three most important evaluation criteria are: (a) analytical validity, (b) clinical validity, and (c) clinical utility. A*nalytical validity* means that your measurement process does a good job measuring what it is supposed to be measuring, and terms such as accuracy, precision, reproducibility, reliability, and robustness get used. More could be said, and much depends on the specifics of the assay, but I think you get the idea. In my example, we'd ask whether we get good gene expression measurements from the samples we are likely to be assaying.

Clinical validity refers to the extent to which the test (measurements plus computation) does a good job predicting the clinical feature of interest, in my example, those who can forgo chemotherapy. Here we're referring to the real-world performance of a predictor, and terms like sensitivity, specificity, false negative rate, false positive rate, positive predictive value, negative predictive value, accuracy, and receiver operating characteristic curves all get used.

Clinical utility is when the assay adds real value to patient management, when it leads to improved outcomes for the patient, compared with current management without this assay. Demonstrating clinical utility can be tricky, as the result will depend on the nature of the comparator, the extent of the comparative analysis, and other matters. In my example we should ask whether the test result frees further people from chemotherapy, without adverse consequences. We might add: to an extent that justifies its cost.

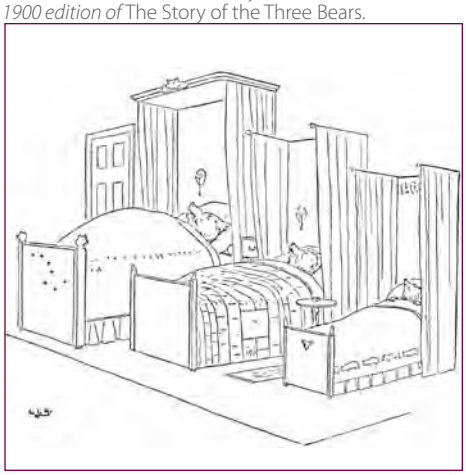
I hope all of this seems reasonable, and that you see there is plenty of room for discussion and research here. Patients, clinicians and those paying the bills all have an interest in getting it right. I also hope you are wondering why I'm telling you this, or perhaps you have guessed?

Statisticians often write papers in which they propose new ways of addressing problems old or new. In such papers, we typically see that in theory and in the simulated world the novel procedure does what the author claims it should do. I'll call this a demonstration of *analytical validity*.

Next comes the question of how well a novel procedure performs in practice, not in theory, but with "real", not simulated, data. I'll call this *applied validity*. Satisfying this criterion requires an entirely different kind of demonstration—not theory, not simulation, but one clearly focused on what our procedure is designed to do, ideally with some "real" data that is accompanied by "truth" or a "gold standard." More often than not, we need to use a lot ingenuity to address this criterion, for "real" data with "truth" or "gold" can be hard to find. Some of you will have wrestled with this issue, but all too often we get one little "real" data example, which hardly satisfies my next criterion. Of course my name for whether or not this new procedure is a real improvement over what we would have done if we didn't have it, is *applied utility*. As with our molecular assays, how well we satisfy this criterion depends on our choice of comparators, and the nature of our comparison. This issue will also be familiar to statisticians.

I think that we statisticians focus too much on demonstrating analytical validity, that we pay relatively little attention to applied validity, and that we typically do a poor job with applied utility. I'd like to see more attention paid to the last two and the issues surrounding them. We should embrace the **rule of three** for statistical innovation: it works in theory, it works in practice, and it truly adds value.

Goldilocks may disagree that good things always come in threes… The three bears, back in their beds after Goldilocks' visit, as illustrated by Leonard Brooke in the 1900 edition of The Story of the Three Bears.



IMS meetings around the world

Joint Statistical Meetings: 2015–2020

JSM 2015
August 8–13, 2015, Seattle, WA
w http://amstat.org/meetings/jsm/2015
IMS invited sessions include three **Wald Lectures** by Susan A. Murphy, the **Le Cam Lecture** by Jon Wellner (*previewed in this issue*), and four **Medallion Lectures**: Jiashun Jin, Michael Kosorok, John Lafferty and Nicolai Meinshausen. Also there's the **IMS Presidential Address** by Erwin Bolthausen.

Book now

If housing reservations are any indication, JSM 2015 may be the biggest JSM yet. All the reserved rooms sold out within 24 hours! More have been added, but if you haven't booked your accommodation yet, don't delay: www.amstat.org/meetings/jsm/2015/housing.cfm

IMS co-sponsored meeting

17th IMS New Researchers Conference
August 6–8, 2015
University of Washington, Seattle, WA
w http://depts.washington.edu/imsnrc17/
e imsnrc17@uw.edu
The 17th IMS New Researchers Conference will be held just prior to the 2015 JSM. The purpose of the conference is to promote interaction and networking among new researchers in probability and statistics.

IMS co-sponsored meeting

2015 NISS/ASA/IMS Writing Workshop for Junior Researchers (part of the Joint Statistical Meetings)
Sunday 9 August & Wednesday 12 August, 2015
Seattle, WA
w http://www.amstat.org/meetings/wwjr/
The National Institute of Statistical Science (NISS), the ASA, and the IMS will hold a writing workshop for junior researchers (subject to availability of funds). The goal of the workshop is to provide instruction in how to write journal articles and grant proposals. Registration has now closed.

IMS sponsored meetings: JSM dates for 2016–2020

JSM 2016
July 30–Aug 4, 2016, Chicago, IL

IMS Annual Meeting @ JSM 2017:
July 29–August 3, 2017, Baltimore, MD

JSM 2018
July 28–August 2, 2018
Vancouver, Canada

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

JSM 2020
August 1–6, 2020
Philadelphia, PA

IMS co-sponsored meeting NEW

The 10th ICSA International Conference
December 19–22, 2016
Shanghai Jiao Tong University, Shanghai, China
IMS Rep: Ming Yuan, University of Wisconsin–Madison
w http://www.math.sjtu.edu.cn/conference/2016icsa/
The tenth ICSA international conference will be held at Xuhui campus of Shanghai Jiao Tong University in China. The theme is *Global Growth of Modern Statistics in the 21st Century*. The International Chinese Statistical Association (ICSA) is a non-profit organization, established in 1987, with the aim of promoting the theory and applications of statistical disciplines through scholarly activities, including publication of journals in statistics and probability, scientific meetings, and other educational programs. The plenary speakers are: Jim Berger, Tony Cai, Kai-Tai Fang, Zhiming Ma, Marc A. Suchard, Lee-Jen Wei and C.F. Jeff Wu.

At a glance:

forthcoming IMS Annual Meeting and JSM dates

2015

IMS Annual Meeting @ JSM: Seattle, WA, **August 8–13, 2015**

2016

IMS Annual Meeting/ 9th World Congress: Toronto, Canada, **July 11–15, 2016**

JSM: Chicago, IL, **July 30 – August 4, 2016**

2017

IMS Annual Meeting @ JSM: Baltimore, MD, **July 29 – August 3, 2017**

2018

IMS Annual Meeting: TBD

JSM: Vancouver, Canada, **July 28–August 2, 2018**

2019

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

More IMS meetings around the world

IMS co-sponsored meeting

Stochastic Networks Conference 2016 UPDATED

June 20–24, 2016

San Diego, CA

NEW WEBSITE: http://stochasticnetworks2016.ucsd.edu/

The aim of the conference is to bring together researchers who share an interest in stochastic network models, to survey recent developments, and to identify future research directions. As in the past, the 2016 meeting will be structured in a workshop format, with approximately 20 hour-long invited talks, allowing ample unscheduled time to maximize interactions between speakers and participants and to facilitate a fruitful exchange of ideas. In addition, there will be a poster session for contributed papers.

Stochastic networks is a multifaceted area of research dealing with the modeling, stability, control, performance, approximation, and design of stochastic networks. It gives rise to challenging and subtle mathematical problems, whose solution often requires a combination of ideas and techniques from several branches of mathematics, including probability theory, stochastic processes, analysis, optimization, algorithms, combinatorics, and graph theory. Research in this area is strongly motivated by applications in diverse domains, ranging from the traditional areas of telecommunications and manufacturing to service operations, biological and social networks, revenue management, and health care.

Like its predecessors, the 2016 Stochastic Networks Conference will emphasize new model structures and new mathematical problems that are motivated by contemporary developments in various application domains, as well as new mathematical methods for stochastic network analysis.

IMS co-sponsored meeting

Fourth IMS Asia Pacific Rim Meeting

June 27–30, 2016

Hong Kong, China

w http://ims-aprm2016.sta.cuhk.edu.hk/

The Institute of Mathematical Statistics Asia Pacific Rim Meeting series promotes interaction and networking among statisticians and probabilists from Asia, the Pacific Rim, and other parts of the world. The previous three meetings were successfully held in Seoul, Tsukuba, and Taipei. We are pleased to announce that the fourth meeting will take place on the beautiful campus of The Chinese University of Hong Kong, during the period June 27–30, 2016. The program covers recent developments and the state-of-the-art in a variety of modern research topics in statistics and probability. For more information, you may contact the program chairs: Ming-Yen Cheng (cheng@math.ntu.edu.tw) and Xuming He (xmhe@umich.edu).

IMS co-sponsored meeting

9th World Congress on Probability and Statistics

July 11–15, 2016. Toronto, Canada

w http://www.fields.utoronto.ca/programs/scientific/16-17/WC2016/

This meeting is jointly sponsored by the Bernoulli Society and the IMS. The Scientific Programme Chair is Alison Etheridge. The Local Chair is Tom Salisbury.

The 9th World Congress on Probability and Statistics will be hosted by the Fields Institute. Previous congresses have been held in Istanbul (2012), Singapore (2008), Barcelona (2004), Guanajuato (2000), Vienna (1996), Chapel Hill (1994), Uppsala (1990), and Tashkent (1986).

IMS co-sponsored meeting

39th Conference on Stochastic Processes and their Applications (SPA)

July 24–28, 2017. Moscow, Russia

w TBC

ENAR dates: 2016–2018

IMS sponsored meetings

March 6–9, 2016: in Austin, Texas

March 12–15, 2017: in Washington DC

March 25–28, 2018: in Atlanta, GA

w http://www.enar.org/meetings.cfm

IMS co-sponsored meeting

Sixth IMS–ISBA joint meeting: BayesComp at MCMSki

January 5–7, 2016. Lenzerheide, Switzerland

w http://www.pages.drexel.edu/~mwl25/mcmskiV/program.html

The next joint IMS–ISBA meeting, also known among participants as "MCMSki V", will be held in Lenzerheide, Switzerland, from Tuesday, January 5 to Thursday, January 7, 2016. This year the meeting will be the first meeting of the newly created BayesComp section of ISBA. The InterDisciplinary Institute of Data Science at USI (Università della Svizzera Italiana) will co-sponsor the meeting and help with the organization. Other sponsors for MCMSki V include Springer, Google, the journal *Statistics and Computing*, Blossom Skis and Deviation Skis. MCMSki V will see the return of the Richard Tweedie ski race, on the afternoon of Wednesday January 6th. The fastest man and woman will be rewarded with a pair of skis (one pair each of Blossom skis and Deviation skis).

The plenary speakers are Stephen Fienberg, Steve Scott, David Dunson, Krys Latuszynski, Tony Lelièvre.

Other meetings around the world

Second ICSA-Canada Chapter Statistics and Data Science Symposium
NEW

August 4–6, 2015
University of Calgary, Alberta, Canada.

w www.ucalgary.ca/icsa-canadachapter2015
e xlu@ucalgary.ca

The first day will include two short courses: Neuroimaging Data Analysis, and Measurement error models, instructed by Profs. Linglong Kong and Grace Yi respectively. In the other two days, there will be plenary lectures, invited paper sessions, contributed paper sessions, and social events.

Student Workshop: Mostly Markov Mixing
NEW

August 30–September 4, 2015
Haifa, Israel

Mini-courses will be given by Persi Diaconis, Yuval Peres and Laurent Saloff-Coste. In addition, there will be several lectures given by Pietro Caputo, Elchanan Mossel and Perla Sousi. The workshop is geared toward graduate students, but post-docs and talented, advanced undergraduates should also find it worthwhile. There is a certain amount of support for housing (but not for airfare). Registration is open until July 31, 2015. For more details, see the Technion mathematics department's Center for Mathematical Sciences (there's a link for this workshop): http://www.math.technion.ac.il/Site/events/EvntOffices/view.php?oid=104

Ninth International Statistics Congress
NEW

October 28–November 1, 2015
Antalya, Turkey

w http://www.istkon.net/istkon09/en

We kindly invite you with great pleasure to participate to the 9th International Bi-annual Statistics Congress, organized by the Turkish Statistical Association. The series of congresses have been realized since 1999 for the aims of bringing together academic, public and private sector statisticians and related experts from various fields. The Congress provides an opportunity for the national statisticians to attend scientific meetings focusing on their own interest. At the same time they can observe new research results in other statistical fields that may have unanticipated applications in their own specializations.

Complex time-to-event data
NEW

December 17–18, 2015
Louvain-la-Neuve, Belgium

w http://www.uclouvain.be/510259

The conference features talks by seven internationally recognized researchers engaged in various topics in survival analysis: Per Kragh Andersen, Gerda Claeskens, Emmanuel Lesaffre, Yi Li, Thomas Scheike, Hans C. van Houwelingen and Lan Wang. In addition, there will be a number of regular invited talks and a poster session. Deadlines: Poster abstracts October 20, 2015; registration October 31, 2015.

Complex Systems in Time Series
NEW

December 4–5, 2015, London, UK

w http://www.lse.ac.uk/statistics/events/SpecialEventsandConferences/Complex-Systems-in-Time-Series

Complex systems can be observed in various places. Understanding any patterns and providing good forecasts in these systems is of paramount importance in decision or policy making. Since data involved is usually high dimensional and dependence among variables can be strong, techniques in handling such data are all evolving to adapt to the new challenges. The aim of this conference is to bring together expertise in the relevant areas to create possible new research opportunities, and gain valuable information on new data analytics.

StatMathAppli 2015
NEW

August 31–September 4, 2015
Fréjus, France

w https://colloque.inra.fr/statmathappli_eng/

The idea of this seminar is to give an opportunity to young statisticians from several countries to meet and present their work in an international meeting. Two series of invited lectures on mathematical statistics and their applications in the real life will be given by outstanding speakers. This year, the invited lectures will be given by Emmanuel Candes, Stanford University, and Ery Arias-Castro, University of California, San Diego.

NIMBioS Investigative Workshop: Computational Advances in Microbiome Research
NEW

July 27–28, 2015
NIMBioS, Knoxville, Tennessee

w http://www.nimbios.org/workshops/WS_microbiome

The overarching goal of this workshop is to bring together and integrate novel bioinformatic techniques from diverse areas of microbial community research.

The workshop is designed as a small, focused workshop bringing together the top thought leaders in computational microbial community analysis techniques from a variety of biological application areas. Participation in the workshop is by invitation only.

Live Stream. The Workshop will be streamed live. Note that NIMBioS Investigative Workshops involve open discussion and not necessarily a succession of talks. In addition, the schedule as posted may change during the Workshop. To view the live stream, visit http://www.nimbios.org/videos/livestream. Join the discussion on Twitter using #CAMRws.

International Conference on Information Complexity and Statistical Modeling in High Dimensions with Applications (IC-SMHD-2016)

NEW

May 18–21, 2016
Cappadocia, Turkey

w http://www.ic-smhd2016.com/

As part of the conference, IC-SMHD-2016 will feature a Festschrift honoring Prof. Dr. Hamparsum (Ham) Bozdogan, Toby McKenzie Professor at the University of Tennessee, for his outstanding contributions not just to the domain of information complexity and model selection enterprise in high-dimensions, but also to his international outreach contributions in disseminating statistical knowledge to young future scholars from many different countries, including Turkey.

3rd Barcelona Summer School on Stochastic Analysis

NEW

June 27–July 1, 2016
Barcelona, Spain

w http://www.crm.cat/en/Activities/Curs_2015-2016/Pages/3rd-BCN-Summer-School-on-Stochastic-Analysis.aspx

The Barcelona Summer School on Stochastic Analysis is a one-week scientific activity consisting mainly of courses addressed to PhD students and young researchers on current research topics in Stochastic Analysis. Selected participants are also given the opportunity to deliver short talks or to display posters.

12th German Probability and Statistics Days 2016: Bochumer Stochastik-Tage

NEW

March 1–4, 2016
Bochum, Germany

w http://www.gpsd-2016.de/

Contact: Sabrina Wolf **e** swolf@eventlab.org

The DMV-Fachgruppe Stochastik organizes jointly with the Ruhr-Universität Bochum the 12th German Probability and Statistics Days 2016 – Bochumer Stochastik-Tage.

In the tradition of the previous conferences, this meeting provides an international forum for presentation and discussion of new results in the area of probability and statistics. Contributed talks will be given in 12 sections devoted to specific topics; the highlight of each section will be one invited main talk.

The plenary speakers are: Sandrine Dudoit, Laszlo Erdös, Martin Hairer, Iain Johnstone and Walter Schachermayer.

Second International Congress on Actuarial Science and Quantitative Finance

NEW

June 15–18, 2016
Cartagena, Colombia

w http://icasqf.org

The Second International Congress on Actuarial Science and Quantitative builds on the success of the first ICASQF, and consolidates the Congress as the premier event in Actuarial Science and Quantitative Finance in Colombia, the Andean Region (Peru, Colombia, Venezuela, Ecuador, and Bolivia) and the Caribbean Region. The Congress will cover a variety of topics in Actuarial Science and Quantitative Finance. Topics include statistics techniques in Finance and Actuarial Science, Portfolio Management, Derivative Valuation, Risk Theory and Life and Pension Insurance Mathematics, Non-Life Insurance Mathematics, and Economics of Insurance among others.

Deadlines: December 1, 2015: Abstract submission opens. February 1, 2016: Deadline for abstract submission for oral communications and posters. March 15, 2016: Registration opens. March 20, 2016: Notification of acceptance/rejection (oral communications and posters). May 1, 2016: Last day to register for presenting authors.

Plenary speakers and short courses given by:

Rama Cont. Semi plenary talk and short course. Imperial College, London, UK.
Jan Dhaene. Plenary talk and short course. KU Leuven, Belgium.
Bruno Dupire. Plenary talk. Bloomberg LP. New York, US
Nicole El Karoui. Plenary talk and short course. École Polytechnique, Palaiseau, France.
Christian Hipp. Semiplenary talk. Karlsruher Institute of Technology, Karlsruhe, Germany.
Jean Jacod. Semi plenary talk and short course. Université Paris VI, Paris, France.
Ioannis Karatzas. Plenary talk and short course. University of Columbia, NY, US.
Glenn Meyers, Plenary talk and short course. ISO Innovative Analytics, New York USA.
Kees Oosterlee. Semi plenary talk. Dutch national research center for mathematics and computer science, Amsterdam Netherlands.
Michael Sherris. Semi plenary talk. UNSW, Sydney Australia.
Fernando Zapatero. Semi-plenary talk. USC, Los Angeles, CA, US.

Employment Opportunities around the world

Australia: Parkville, Victoria
University of Melbourne
Lecturer in Probability Theory and Stochastic Processes
Http://jobs.imstat.org/c/job.cfm?site_id=1847&jb=23887304

Kazakhstan: Astana, Aqmola
Nazarbayev University
Faculty - Science - Mathematics
http://jobs.imstat.org/c/job.cfm?site_id=1847&jb=24351626

Mexico: Guanajuato
Centro de Investigacion en Matematicas, A.C.
Tenure-track researcher
http://jobs.imstat.org/c/job.cfm?site_id=1847&jb=23281660

New Zealand: Christchurch
The University of Auckland
Research Fellow
http://jobs.imstat.org/c/job.cfm?site_id=1847&jb=24381738

Philippines: Manila
Asian Development Bank
Statistician
http://jobs.imstat.org/c/job.cfm?site_id=1847&jb=23867283

United States: Los Angeles, CA
UCLA Fielding School of Public Health
Open-Rank Tenure-Track or Tenured Faculty Position
http://jobs.imstat.org/c/job.cfm?site_id=1847&jb=24276452

United States: Sacramento, CA
UC Davis Health System
Senior Statistician
http://jobs.imstat.org/c/job.cfm?site_id=1847&jb=23867358

United States: Lowell, MA
University of Massachusetts Lowell
Assistant/Associate Professor - Statistics - Mathematical Science
http://jobs.imstat.org/c/job.cfm?site_id=1847&jb=24262632

United States: Williamstown, MA
Williams College
Assistant Professor of Statistics
http://jobs.imstat.org/c/job.cfm?site_id=1847&jb=24448901

Visit the jobs section on the IMS website, where you can:

* *View job opportunities in probability and statistics, including in academia and industry*
* *Post your resume/CV online*
* *Create personal Job Alerts, and never let a matching job opportunity pass you by!*

http://jobs.imstat.org/

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. t means telephone, f fax, e email and w website. Please submit your meeting details and any corrections to Elyse Gustafson at erg@imstat.org

August 2015

IMS August 3–5: Honolulu, HI. **Statistics and Exoplanets w** http://exostats.org

NEW August 4–6: Calgary, Canada. **Second ICSA-Canada Chapter Statistics and Data Science Symposium**
w www.ucalgary.ca/icsa-canadachapter2015

August 4–9: Knoxville, TN, USA. **NIMBioS Tutorial: Evolutionary Quantitative Genetics w** http://www.nimbios.org/tutorials/TT_eqg

August 5–8: Washington, DC. **MAA MathFest**
w http://www.maa.org/100

IMS August 6–8: Seattle, WA. **17th IMS New Researchers Meeting**
w http://depts.washington.edu/imsnrc17/

IMS August 8–13: Seattle, WA. **IMS Annual Meeting at JSM 2015.**
w http://amstat.org/meetings/jsm/2015

August 10–14: Beijing, China. **8th International Congress of Industrial and Applied Mathematics w** http://www.iciam2015.cn/

August 17–21: SAMSI, NC. **SAMSI Challenges in Computational Neuroscience Opening Workshop w** http://www.samsi.info/workshop/2015-16-ccns-opening-workshop-august-17-21-2015

August 23–27: Utrecht, The Netherlands **36th Annual Conference of the International Society for Clinical Biostatistics**
w http://www.iscb2015.info/

NEW August 30–September 4: Haifa, Israel. **Student Workshop: Mostly Markov Mixing**

NEW August 31–September 4: Fréjus, France. **StatMathAppli 2015**
w https://colloque.inra.fr/statmathappli_eng/

August 31–September 4: SAMSI, NC. **SAMSI Forensics Opening Workshop w** http://www.samsi.info/workshop/2015-16-forensics-opening-workshop-august-31-september-4-2015

September 2015

September 2–5: Hyderabad, India **IXth International Multiple Comparisons Procedures (MCP) Conference**
w http://www.mcp-conference.org/hp/2015/

September 14–16: University of Warwick, UK. **CRiSM Workshop: Models and Inference in Population Genetics w** http://www2.warwick.ac.uk/fac/sci/statistics/crism/workshops/populationgenetics

September 20–23: Ribno (Bled), Slovenia. **Applied Statistics 2015 (AS2015) w** http://conferences.nib.si/AS2015/

September 21–25: Vienna, Austria. **8th International Workshop on Simulation w** http://iws.boku.ac.at/index.php

September 24–25: NCAR Mesa lab, Boulder, CO. **5th International Workshop on Climate Informatics**
w https://www2.cisl.ucar.edu/events/CI2015

September 26: Harvard University, Cambridge, MA, USA **2015 New England Symposium on Statistics in Sports**
w http://www.nessis.org/

September 30–October 2: NIMBioS, Knoxville, TN. **Mathematics of Planet Earth 2013+ Workshop on Education for the Planet Earth of Tomorrow**
w http://www.nimbios.org/education/WS_mpe2015

October 2015

October 5–7: Dubai, UAE. **Seventh Global Summit on Cancer Therapy w** http://cancer.global-summit.com/middleeast/

October 28–29: Washington DC. **2015 Modern Math Workshop**
w http://www.msri.org/workshops/789

NEW October 28–November 1: Antalya, Turkey. **Ninth International Statistics Congress**
w http://www.istkon.net/istkon09/en

November 2015

November 10–13: Prague, Czech Republic. **AMISTAT 2015 (Analytical Methods in Statistics)**
w http://www.karlin.mff.cuni.cz/~amistat2015/

December 2015

NEW December 4–5: London, UK. **Complex Systems in Time Series w** http://www.lse.ac.uk/statistics/events/SpecialEventsandConferences/Complex-Systems-in-Time-Series

December 6–11: Atlantic City, NJ, USA. **71st Annual Deming Conference on Applied Statistics w** www.demingconference.com

January 2016

ims January 5–7: Lenzerheide, Switzerland. **Sixth IMS-ISBA joint meeting: BayesComp at MCMSki.**
w http://www.pages.drexel.edu/~mwl25/mcmskiV/program.html

NEW January 25–27: Lunteren, The Netherlands. **15th Winter school on Mathematical Financew** https://staff.fnwi.uva.nl/p.j.c.spreij/winterschool/winterschool.html

March 2016

NEW March 1–4: Bochum, Germany. **12th German Probability and Statistics Days 2016: Bochumer Stochastik-Tage**
w http://www.gpsd-2016.de/

ims March 6–9: Austin, Texas. **2016 ENAR/IMS Spring Meeting**
w http://www.enar.org/meetings.cfm

May 2016

NEW May 18–21: Cappadocia, Turkey. **International Conference on Information Complexity and Statistical Modeling in High Dimensions with Applications (IC-SMHD-2016)**
w http://www.ic-smhd2016.com/

June 2016

NEW June 15–18: Cartagena, Colombia. **Second International Congress on Actuarial Science and Quantitative Finance**
w http://icasqf.org

June 20–23: Geneva, Switzerland. **ICES-V, the 5th International Conference on Establishment Statistics w** TBC

ims June 20–24: San Diego, CA. **Stochastic Networks Conference 2016 NEW WEBSITE** http://stochasticnetworks2016.ucsd.edu/

ims June 27–30: Hong Kong, China. **Fourth IMS Asia Pacific Rim Meeting w** http://ims-aprm2016.sta.cuhk.edu.hk/

NEW June 27–July 1: Barcelona, Spain. **3rd Barcelona Summer School on Stochastic Analysis w** http://www.crm.cat/en/Activities/Curs_2015-2016/Pages/3rd-BCN-Summer-School-on-Stochastic-Analysis.aspx

July 2016

ims July 11–15: Toronto, ON, Canada. **IMS Annual Meeting at 9th World Congress in Probability and Statistics**
w http://www.fields.utoronto.ca/programs/scientific/16-17/WC2016/

ims July 30 – August 4: Chicago, USA. **JSM 2016**
w http://amstat.org/meetings/jsm/

December 2016

NEW ims December 19–22: Shanghai, China. **10th ICSA International Conference**
w http://www.math.sjtu.edu.cn/conference/2016icsa/

July 2017

ims July 24–28: Moscow, Russia. **39th Conference on Stochastic Processes and their Applications** (SPA) **w** TBC

International Calendar *continued*

Benson Kua / Wikimedia Commons

July 2017 *continued*

July 29 – August 3: Baltimore, USA. **IMS Annual Meeting at JSM 2017** **w** http://amstat.org/meetings/jsm/

July 2018

July 28 – August 2: Vancouver, Canada. **JSM 2018** **w** http://amstat.org/meetings/jsm/

July 2019

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

August 2020

August 1–6: Philadelphia, PA, USA. **JSM 2020** **w** http://amstat.org/meetings/jsm/

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 http://www.imstat.org/submit-meeting.html We'll list them here in the Bulletin, and on the IMS website too, at www.imstat.org/meetings

Membership and Subscription Information

Journals

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

Individual and Organizational Memberships

Each individual member receives the *IMS Bulletin* (print and/or electronic) and may elect to receive one or more of the five scientific journals. Members pay annual dues of $115. An additional $69 is added to the dues of members for each scientific journal selected ($43 for *Stat Sci*). **Reduced membership** dues are available to full-time students, new graduates, permanent residents of countries designated by the IMS Council, and retired members. **Organizational memberships** are available to departments, corporations, government agencies and other similar research institutions at $169 per year.

Individual and General Subscriptions

Subscriptions are available on a calendar-year basis. **Individual subscriptions** are for the personal use of the subscriber and must be in the name of, paid directly by, and mailed to an individual. Individual subscriptions for 2015 are available to *The Annals of Applied Probability* ($194), *The Annals of Applied Statistics* ($194), *The Annals of Probability* ($194), *The Annals of Statistics* ($194), *Statistical Science* ($168), and *IMS Bulletin* ($125). **General subscriptions** are for libraries, institutions, and any multiple-readership use. Institutional subscriptions for 2015 are available to *The Annals of Applied Probability* ($457), *The Annals of Applied Statistics* ($457), *The Annals of Probability* ($457), *The Annals of Statistics* ($457), *Statistical Science* ($260), and *IMS Bulletin* ($113). Airmail rates for delivery outside North America are $130 per title.

IMS Bulletin

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

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General information: The *IMS Bulletin* and webpages are the official news organs of the Institute of Mathematical Statistics. The *IMS Bulletin*, established in 1972, is published 8 times per year. Print circulation is around 2,000 paper copies, and it is also free online in PDF format at http://bulletin.imstat.org, posted online about two weeks before mailout (average downloads over 8,000). Subscription to the *IMS Bulletin* costs $125. To subscribe, call 877-557-4674 (US toll-free) or +1 216 295 2340 (international), or email staff@imstat.org. The IMS website, http://imstat.org, established in 1996, receives over 30,000 visits per month. Public access is free.

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A single 60-day online job posting costs just $285.00. We will also include the basic information about your job ad (position title, location, company name, job function and a link to the full ad) in the *IMS Bulletin* at no extra charge. See http://jobs.imstat.org

Advertising meetings, workshops and conferences

Meeting announcements in the *Bulletin* and on the IMS website at http://imstat.org/meetings are free. Send them to Elyse Gustafson; see http://www.imstat.org/program/prog_announce.htm

Rates and requirements for display advertising

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

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Issue	Deadline	Online by	Mailed
1: January/February	**December 1**	December 15	January 1
2: March	**February 1**	February 15	March 1
3: April/May	**March 15**	April 1	April 15
4: June/July	**May 1**	May 15	June 1
5: August	**July 1**	July 15	August 1
6: September	**August 15**	September 1	September 15
7: Oct/Nov	**September 15**	October 1	October 15
8: December	**November 1**	November 15	December 1

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Articles

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