

Regional Newsletter, July 2018



In this issue

ELIZABETH WILLIAMSON

Welcome to the Summer 2018 issue of the newsletter of the British and Irish Region of the IBS. This issue includes a report on our recent meeting about the modern bootstrap, a report on the bursaries awarded to career-young biometricians to attend the recent IBS 2018 held in Barcelona, and announces two upcoming meetings – both of which promise to be exciting and interesting events – along with the usual offerings from our regional officers. We also reflect on the outstanding contributions of a long-time member of this society, Doug Altman.

Please make a note of our forthcoming events in your diary. If you have items you would like to contribute to future newsletters, we would love to hear from you: just send a message to elizabeth.williamson@lshtm.ac.uk.

President's corner

MARTIN RIDOUT

As I write, the 28th International Biometric Conference (IBC) in Barcelona is underway, and I hope that many members of the British and Irish Region (BIR) are taking the opportunity of its relative proximity to attend. Amongst the interesting range of invited sessions is one on Dynamic individualised risk prediction co-chaired by our committee member Ruth Keogh. Even when held in Europe, the costs of attending IBCs can accumulate quickly, and in conjunction with the Fisher Memorial Trust we have again provided £500 bursaries to five of our young members, to help offset the costs of attendance. The bursaries were awarded following a competitive selection process.

One of the main attractions of IBCs is the opportunity to interact with international colleagues and we are fortunate in the BIR that such an opportunity also comes round in alternate years through the Channel Network Conferences (CNC), held jointly with the Belgian, French and Netherlands regions. The last CNC in Hasselt, Belgium in 2017 was well attended by BIR members and I hope that we will also see strong support for the 2019 CNC to be held at Rothamsted Research 10-12 July 2019.

Planning for the meeting, which coincides with the centenary of RA Fisher's arrival at Rothamsted, is well underway.

Later this year, we have two further half-day meetings planned, on electronic health records (26 September 2018) and on advances in the analysis of count data (28 November 2018); details of these appear elsewhere in this newsletter. The count data meeting will also include the AGM and my presidential address.

Because of the timing of our Newsletters, this will be my last contribution to President's Corner, even though my term runs for almost 6 months more, so it is an appropriate time to reflect on the challenges that lie ahead. I think the biggest immediate challenge is financial. At the current relatively unfavourable dollar exchange rate, much of the annual subscription that we charge goes directly to the International Society. At the same time, it has become more expensive to organise meetings, because we can no longer find 'free' venues. Although we pay academic rates rather than commercial rates on the venues we use, the cost is still quite substantial, and relatively high attendance is needed just to cover costs. The BIR aims to sponsor younger biometricians through the Young Biometrician Award and through bursaries to attend IBCs and CNCs, as well as contributing (like many other regions) to the International Office to help fund people from developing countries to attend IBCs. There is a strong desire to continue this tradition of supporting younger and less-advantaged members of the Society, and thinking about how we can best achieve this in the current financial climate will be a focus for the committee moving forward. If you have thoughts or suggestions, do please email me at msr@kent.ac.uk. Of course there is strength in numbers, and one thing that we can all do is to encourage our colleagues to become members of the BIR so that we continue as a thriving and dynamic society.

It has been an honour to be President of the BIR and a pleasure to work with the current and past members of the committee, who have worked hard organising meetings, representing the region in the wider International Society, producing the Newsletter, maintaining our web



pages, judging applications for bursaries, and so on. I would particularly like to thank Rhian Daniel (Membership Secretary), Lisa McFetridge and Mark Brewer (current and past Honorary Treasurer respectively) and John Matthews and Ruth King who have provided support as vice-Presidents during my term. And I have relied heavily on Sue Welham who has done an outstanding job as Honorary Secretary, a role that she will finally be relinquishing after the AGM.

Secretary's Corner

SUE WELHAM

I shall be standing down as BIR Secretary at the AGM this year, so it's natural to look back on changes during my 5-year term. It has been great to see our awards for career-young biometricians – bursaries and the Young Biometrician Award – become more popular and competitive, with increasing numbers of applicants of very high quality. It has been harder to adapt to the changing nature of universities, which have made access to meeting rooms much more difficult and expensive. As our membership fees only just cover our dues to the IBS, our meetings have to cover their costs, and this makes it riskier for us to host smaller meetings. The frantic nature of today's working environments also makes people less likely to take time out of the daily grind, which means more of our meetings turn into smaller meetings. So I'd like to ask members to take the time to attend BIR meetings if you possibly can; you might learn something or meet someone interesting, as well as keeping the BIR healthy and active.

Committee Members Wanted

SUE WELHAM

In the long run-up to our AGM in November, it is time to ask for members to put themselves forward as potential committee members. Two committee places become available each year for a term of three years. The role requires attendance at two committee meetings per year (usually in April and October in London, but attendance can be by telephone) and active participation in the activities of the region, which can include organisation of scientific meetings (usually in collaboration with other committee members or societies) and wider promotion of the society among biometricians in all fields. If you are interested or would like more information, please contact me at stats4biol@gmail.com by 15th August.

Meeting report: 'The Modern Bootstrap'

DANIEL FAREWELL

On a warm May afternoon in 2018, a representative sample ($n = 25$) of statisticians gathered in the Hardy Room of the London Mathematical Society for a scientific meeting on the subject of the Modern Bootstrap.

I was persuaded to give a short introductory talk, reminding myself (and hopefully others) of the basics of statistical bootstrapping, and gently anticipating some of the bootstrap variations that were to be the afternoon's main focus. I used characters from TV's 'the Simpsons' to illustrate just some of the many resampling strategies employed by today's bootstrappers.

Richard Everitt from the University of Reading gave the first of our research presentations: a description of how to use the bootstrap to carry out Bayesian computations. In the context of predator-prey interactions (Lotka-Volterra models), Richard demonstrated the use of synthetic likelihoods when exact likelihoods are intractable. He showed how bootstraps could be used to evaluate approximate synthetic likelihoods using fewer simulations, and in particular how different choices of bootstrap sampling could be tailored to different use cases, such as 'big data' settings.

Following collective subsampling of drinks and biscuits, the University of York's Adriana Cornea-Madeira presented some of her work on hypothesis testing using parametric bootstraps. She was particularly concerned with the tricky setting where parameters may lie on the boundary of the parameter space, in which asymptotics-based Wald tests may perform poorly. She used a restricted parametric bootstrap to prove a technical convergence theorem, which involved some non-standard asymptotic expansions. Using both simulations and an application to Atlantic climatology data, she convinced us that her approach was indeed workable and effective in such boundary cases – a perfect storm!

Finally, Alistair Young of Imperial College London outlined important theoretical and practical reasons why resampling datasets of smaller size than the original dataset may be preferable in some contexts. Within the dependent data setting (e.g. time series), he argued that such subsampling preserves covariance structure in finite samples, but also that it offers advantages in efficiency and scalability. Alistair offered several workable suggestions for selection of subsample sizes, but also left



us with an open research question: how to make such choices most efficiently.

The day had a clear practical focus and attendees left with plenty of ideas for improved bootstrapping in their own areas of work. Equally, there was enough beautiful mathematics presented to keep even the great Hardy happy!



Presenters at the bootstrap meeting. From left to right: Alistair Young, Adriana Cornea-Madeira and Richard Everitt.

Career-young biometrician bursaries

HANNAH WORTHINGTON

We are very pleased to announce that the IBS British and Irish region jointly with the Fisher Memorial Trust have awarded 5 of our top career-young biometrician's bursaries to attend the XXIXth International Biometric Conference in Barcelona from 8th-13th July. The bursaries were awarded after a highly competitive application process with submissions judged on the use of biometrics to tackle an applied problem, the quality of the approach and the enthusiasm of the candidate for their research area. This year we have made five awards of up to £500 to: Laura Boyle (Queen's University Belfast), Peter Godolphin (University of Nottingham), Marina Jiminez-Munoz (University of Kent), Simon Newsome (London School of Hygiene and Tropical Medicine), and Haiyan Zheng (Lancaster University). Each recipient will be presenting at this year's conference, Laura, Marina and Haiyan will be giving oral presentations on time-varying outlier impacts on robust mixed models, integrated population modelling incorporating spatial information and

Bayesian hierarchical model to incorporate pre-clinical data respectively, whilst Peter and Simon will feature in the poster sessions with posters on the assessment of cross-over designs against missing values and estimating treatment effects when everyone receives treatment. We look forward to reading the short reports from these five recipients on their experiences at the IBC which will appear on the BIR website after the conference.

Upcoming meeting: AGM and meeting on Advances in the Analysis of Count Data, 28 November 2018

MARTIN RIDOUT

The AGM will take place in the Hardy Room at the London Mathematical Society, Russell Square, London at 1.30pm on Wednesday 28 November 2018.

Following the AGM, Martin Ridout will give his Presidential Address. This will be followed by three talks on the analysis of count data: Dr Angela Noufaily (Warwick) will talk on 'Taylor's power law and counts of infectious organisms', Dr Alina Peluso (Imperial) will talk on 'Discrete Weibull regression models for count data' and Prof Peter Neal (Lancaster) will talk on 'Time series models for count data: Which model to choose?'

Upcoming meeting: 'Statistical challenges in utilising Electronic Health Records for medical research', 26 September 2018

MICHAEL SWEETING AND ELIZABETH WILLIAMSON

This meeting will take place in the Hardy Room at the London Mathematical Society, Russell Square, London, on Wednesday 26th September 2018, 1.30-5.00pm.

Five speakers will explore statistical challenges in utilising Electronic Health Records for medical research. Angela Wood, from the University of Cambridge, will talk about 'Estimating cardiovascular disease risk in electronic health records with incomplete records and repeated measurements of risk predictors'. John Tazare, from the London School of Hygiene and Tropical Medicine, will discuss 'An application of the high-dimensional Propen-



city Score to UK Electronic Health Records'. Our third speaker, Harvey Goldstein, from the University of Bristol, will talk on 'Linkage matching errors and quantifying uncertainty for model fitting'. Elizabeth Williamson, also from the London School of Hygiene and Tropical Medicine, will discuss 'Missing data in electronic health record research: challenges and (some) solutions', and finally Peter Diggle, from Lancaster University, will talk on 'Real-time spatial health surveillance using routinely recorded clinical data'.

Obituary: Doug Altman

STEPHEN EVANS

Each of us is unique if looked at in a sufficiently high number of dimensions. Doug Altman, who died on 3rd June 2018, was unique when looked at even in a relatively small number of dimensions. In January 2015 he was diagnosed with colorectal cancer, which responded to treatment for about 3 years. He was able to keep working until shortly before he died.

His research output in medical statistics is an extreme outlier in terms of its magnitude, quality and influence. His record of collaboration, especially with Martin Bland, is unparalleled; his encouragement of younger statisticians and his inclusive and kind approach to everyone endeared him to all who met him. Doug was always fun to be with, whether enjoying an Indian meal or working on a statistical project. There would be a pause: Doug had seen some quirk that his sense of humour appreciated, and his characteristic laughter would ring out. Many of his lectures and other clips of him are available on the internet, and at least one that has captured that infectious laugh.

Doug read statistics as one of the first undergraduates at the new University of Bath. His first job in 1970 was at St Thomas' Hospital Medical School with Walter Holland (who also died in 2018). He moved in 1977 to Northwick Park, the Medical Research Council's Clinical Research Centre, where he worked with Patrick Royston, another important long-term collaborator. Most of his early statistical experience was in working with medical researchers, and his meeting the late Dave Sackett at St Thomas' was clearly an important influence. Later, his reading of Donald Mainland's book and other writings on medical statistics encouraged him to emphasise statistical thinking rather than statistical arithmetic.



Long-time member of the British and Irish Region of the Biometric Society: Doug Altman

He seemed to prefer a compartmentalised life and many collaborators were unaware of his family. Sue, his wife and partner over many years, was a tremendous support to him. He saw no need to acquaint his children with his academic reputation, and his daughter was unaware of his standing until fellow-students at university mentioned it. Family friends remember his enthusiasm for cycling on holidays and enjoyment in travel. Doug's tastes in music were eclectic and possibly even idiosyncratic; his hair and beard would have done justice to any member of a 1970's rock band.

While remaining modest about his own achievements, Doug was passionately critical of the poor standards in medical research. He tried to improve the situation by writing his textbook, "Practical Statistics for Medical Research". He regarded its publication in 1990 as a major achievement: "Starting one is easy, finishing it is much more difficult". This book has helped and educated many thousands of investigators and continues to sell. After studying the quality of reports of trials he devoted much of his career to trying to improve reporting. Although he was not an author of the first CONSORT paper, the updating of CONSORT with its extensions and similar guidelines on systematic reviews owed much to his capacity for driving them along. The EQUATOR network [<http://www.equator-network.org>] now has a plethora of guidelines to help researchers, especially in reporting, but also, as with the STRATOS initiative, in doing research. In all of these he worked with many others, notably David Moher from Ottawa, Canada. Doug was never content to have published guidelines – he wished continually to improve them, and also to try to measure their impact on the medical literature. His work has undoubt-



edly benefitted many thousands, if not millions, of patients around the world by helping to filter out poor research and improve the quality and clarity of good research.

Forty thousand is a number that may be associated with him. It is the current number of citations (according to Google) of The Lancet's most cited paper ever: his 1986 publication with Martin Bland on method comparison. It is also, approximately from Google Scholar, the overall number of citations of his various CONSORT papers; and the number of citations his papers of all types received in the year 2017 alone. The number of citations of the 2009 PRISMA statement, and others concerning systematic reviews and meta-analysis, exceeded 40,000 by 2017. Such a record is extremely impressive, but it came from a man who never had a PhD (though he obtained a DSc based on his publications; perhaps an even higher doctorate needs to be invented to recognise his amazing record!), and whose early path from school through university was something of a struggle for him. Maybe that was what gave him a gentle touch with others. Perhaps also his lack of self-importance allowed him to be insightfully critical of poor research without causing offence.

In 2014, The Biometric Society heard an interesting

talk from Martin Bland about their most highly cited paper: https://www-users.york.ac.uk/~mb55/talks/bland_limits_agreement.pdf

This paper was a "Citation Classic" by 1992 and has gone on being cited, becoming one of the most highly cited papers in any area of research.

Doug grasped opportunities that arose, with no organised plan or high ambitions for honour. His BMJ "Lifetime Achievement Award", and the delightful presentation of a (very large) bound copy of all his BMJ publications, are indicators of the high esteem in which he was held. He and the late Martin Gardner were the first statistical members of their "Hanging Committee". Stephen Lock, then editor of the BMJ, named the committee after the Royal Academy's Hanging Committee, where to be "hung" was a great honour. This name, that meant something other than the first impression, appealed to Doug's humour as well.

Doug's early death is such a loss to us all.

BIR Committee 1986-1988

Council 1990-1993

President 1997-1998

Doug was a member up to and including this year.

