The Statistical Society of Australia
News

SSAI

In this issue

KNIBBS LECTURE 2013

The annual Knibbs lecture was held on 26 November at the ANU. The speaker was Louise Ryan, Distinguished Professor of Statistics at the University of Technology Sydney, with discussants Associate Professor Steven Roberts of the ANU College of Business and Economics and Dr Shuvo Bakar of CSIRO Computational Informatics. Louise's topic was "Handling Covariate Uncertainty in Environmental Epidemiology and Risk Assessment".

In outlining her talk Louise described the motivating applications, the challenges of model uncertainty, environmental risk assessments and its limitations in the context of epidemiological data. She motivated Bayesian model averaging as a tool for handling model selection uncertainty. In essence, some of the 'standard' processes in bio-medical analyses can lead to biased models – testing whether a variable is significant, and if not dropping it from the model, ignores the uncertainty associated with the variable selection process in the context of the particular dataset being analysed.

As an example she discussed Polychlorinated Biphenyls (PCB) and their impact on child development. Although banned in many countries since the 1970s, they persist as a ubiquitous pollutant. While deleterious effects of very high exposures are clear, the impact of chronic low-level exposure remains controversial, and even well-designed studies yield different conclusions. These differences can be explained by differing methods to assess exposure and outcome, methods on analysing data, adjusting for confounding effects, and levels of exposure. Some studies contain extremes, and it can be difficult to separate effects of other pollutants.

Louise Ryan

Louise then discussed in detail a study by Walkowiak et al (the 'Düsseldorf cohort'). This measured the outcomes for babies at 42 months of age, from 88 mothers who breastfed, and who had their PCB exposure levels measured in their breast milk. Other covariates included maternal age, Body Mass Index, alcohol consumption and socioeconomic status and gender of the baby; some of these are correlated with each other.

In a traditional modeling approach a number of plausible models would be considered, and inferences drawn from a single "final" model. This approach underestimates the true variability and uncertainty due to the model selection process, and can result in over-confident, risky decision making.

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Subscriptions

The Newsletter of the Statistical Society of Australia is supplied free to all members of the society. Any others wishing to subscribe to the newsletter may do so at an annual cost of A$30.00 for an issue of four numbers.

Advertising

Advertising will be carried in the Newsletter on any matters which the Editors feel are of interest to the members of the Society.
For details ofadvertising rates, etc. contact the SSAI Executive Officer at eo@statsoc.org.au

DEADLINE FOR NEXT NEWSLETTER
10 August 2014

EDITORIAL

The Statistical Society of Australia (Inc) was formed in 1962 from the New South Wales Statistical Society and the Canberra Statistical Society, so that just two years ago the Society celebrated its 50th birthday. Over 700 members nation-wide as well as overseas reap the benefits of belonging to the professional society for statisticians in Australia.

In 1997 the society began offering accreditation to its members. The SSAI was the first of the statistics societies to do this, with British and American schemes commencing several years later. Recent graduates can seek Graduate Statistician accreditation (GStat) and established statisticians can seek Accredited Statistician status (AStat). University course can also be accredited which ensures automatic GStat status to all graduates of the course.

The Society consists of branches in each state, which organise monthly meetings and occasional workshops and other events. This is where the main action of the society takes place at a local level and there are plenty of opportunities for interested statisticians to get involved. Contact details for all the Branches are in this newsletter, so feel free to get in touch with the Society in your state.

There are also several special interest sections: Bayesian statistics, environmental statistics, social sciences, statistical education, surveys & management, biostatistics, international engagement and the Young Statisticians' Network. Many sections sponsor a session at the conference, as well as running other workshop and events on an ad-hoc basis. Look out for activities in your area advertised through the newsletter, or on the Society's website.

The website (www.statsoc.org.au) is constantly updated with professional development activities, webinars, job ads and other news. Bookmark this site to keep in touch with Society news and other events as they occur.

In honour of the ASC-IMS conference in July, a print run of this newsletter for all conference delegates has been supplied courtesy of Datalytics. We hope that delegates enjoy having a copy in their hands and that maybe you will be inspired to keep up the contact by joining the Society for the future.

Alice Richardson

and **Michael Adena**

PRESIDENT'S COLUMN

Science, Technology and Statistics

John Henstridge

The Statistical Society of Australia has many roles, one of which is to represent the subject and the members to the wider community and in particular to government. In this, the Society works in collaboration with other mathematical associations, namely the Australian Mathematical Society (AustMS), the Australian Society for Operations Research (ASOR) and the Mathematics Education Research Group of Australia (MERGA). The four associations form the mathematical sciences cluster within Science & Technology Australia (STA), the body that "represents 68,000 scientists and technologists, and promotes their views on a wide range of policy issues to government, industry and the community". (It was previously known as FASTS). As it is the Statistical Society's turn to represent the cluster within STA, I am now a member of its board.

My involvement to date has been to attend a very successful Science Meets Parliament, an almost annual occasion where Australian scientists have access to key government decision makers and members of Parliament. While it was an exciting event, to me it emphasised three things.

- First, it is necessary for all scientists to participate in informing the political community of the reasons why Australia should invest in science – there is a genuine wish to make the right decisions but a desperate need for information to inform those decisions. Politicians are used to making decisions with uncertainty, so there is a unique role for statisticians in this
- The second point is that an event such as Science Meets Parliament only scratches the surface. We need broader ongoing contact with politicians.
- Thirdly, it is easy for the mathematical sciences to be forgotten when science and technology are being discussed.

My ten minutes talking about issues facing the mathematical science and statistics in particular with Bob Baldwin, the Parliamentary Secretary assisting the Minister for Industry in the area of science, could not cover much. I had to be very choosy and restrict myself to a couple of issues – I talked about the decline in mathematical science departments in our universities and the need to a stronger focus on mathematics in our secondary schools. Clearly there are many other issues I could have talked about, and it would have been good if I could have spoken to more ministers. It is worth noting that my discussion with Bob Baldwin was made easier by the fact that he knew of and had met Terry Speed.

It is important that the mathematical sciences work together in this, recognising that we have so much in common, while not ignoring the differences amongst ourselves. This means more collaborative efforts with bodies like the Australian Mathematical Sciences Institute. I also observed at Science Meets Parliament that many areas of science push their story far more strongly than seems to come naturally to the mathematical sciences. Perhaps it is the mathematician's rigour and precision that stops us from making claims that we cannot fully justify, but in this public relations arena it can mean we are not assertive enough. In the public eye mathematics is simply not seen enough.

One small but in my mind important step by the Society was to sponsor a Young Statistician to attend Science Meets Parliament. Kirsten Hancock was successful in both applying for this sponsorship and contributing to Science

> Continued on next page

Meets Parliament. Seeing Kirsten ask a statistically very relevant question of a politician in a public forum proved to me that we statisticians can argue for our profession and have a good case to present.

My role at STA will be to ensure that the mathematical sciences are not forgotten in the talk about science and technology. As always, if members have issues to be raised in regard to this, please contact me.

John Henstridge
President
Statistical Society of Australia

EVENTS

SUMMER SCHOOL ON MODERN METHODS IN BIOSTATISTICS AND EPIDEMIOLOGY

8-21 June 2014, Cison di Valmarino-Treviso, Itlay

34TH INTERNATIONAL SYMPOSIUM ON FORECASTING – ECONOMIC FORECASTING: PAST, PRESENT AND FUTURE

29 June- 2 July 2014, Rotterdam, The Netherlands

FOURTH BIENNIAL INTERNATIONAL STATISTICAL ECOLOGY CONFERENCE (ISEC2014)

1-4 July 2014, Montpellier France

AUSTRALIAN STATISTICAL CONFERENCE (ASC2014)/IMS ANNUAL MEETING

7-10 July 2014, Sydney

ISBA 2014 - TWELTH WORLD MEETING OF ISBA

14-18 July 2014, Cancun, Mexico

THE 29TH INTERNATIONAL WORKSHOP ON STATISTICAL MODELLING

14-18 July 2014, Centre for Statistics of the Georg-August-Universität Göttingen (Germany)

2014 COMBINED IUFRO AND SOCIETY OF AMERICAN FORESTERS AND CANADIAN INSTITUTE OF FORESTRY WORLD CONGRESS MEETING

With David Brillinger and Abdel El-Shaarawi
8-11 October 2014, Salt Lake City, USA

ISI REGIONAL STATISTICS CONFERENCE "STATISTICAL SCIENCE FOR A BETTER TOMORROW"

16-19 November 2014, Kuala Lumpur, Malaysia
http://www.isi-rsc2014.my/

BIOINFSUMMER

1 – 5 December 2014, Melbourne, VIC

AUSTRALASIAN APPLIED STATISTICS CONFERENCE

1 – 5 December 2014, Port Lincoln, SA

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Further contact details for Society Secretaries and Section Chairs can be obtained by contacting the Society on (02) 6251 3647

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Louise showed an analytic formula for the bias and then then illustrated by simulations of a simple model and the circumstances when the probability of the confidence interval includes the true ß, for varying values of ß. For small values of ß the confidence intervals that ignored the selection process can be quite wrong. She emphasized that the traditional approach of picking the best model and reporting confidence intervals for coefficients may be biased, especially where there is a high degree of noise. She then illustrated that estimates of a 'safe' dose based on an estimated lower confidence limit can be unreliable.

She then moved on to the estimation of a Benchmark Dose (BMD, and its lower limit BMDL) when they are derived from linear regression, especially in the context of model uncertainty. Model selection strategies include stepwise, penalty based (such as the Lasso), Bayesian model averaging (BMA) and model averaging. With BMA the posterior marginal likelihood, which appears in both the numerator and denominator of the expression for the posterior model probability, is hard to compute except in a few simple cases. Simulation-based approaches and approximations based on AIC or BIC are possible.

In conclusion Louise noted that BMA can be used to find the full empirical distributions of BMDs and BMDLs which capture both model uncertainty and parameter uncertainty. Open questions included better approximate solutions, improving the MCMC performance, how BMD compares with Lasso and other penalization approaches.

In his remarks, Prof Roberts discussed other aspects of model selection.

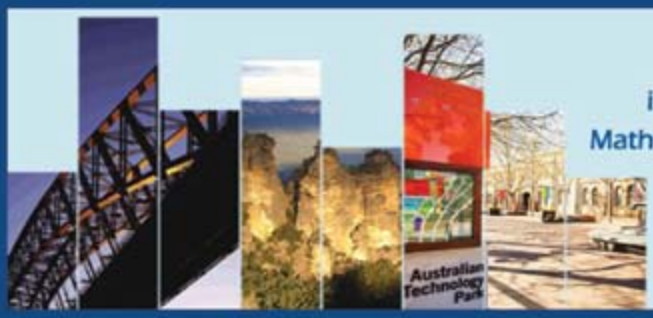
In his remarks, Dr Bakar first reviewed Louise' presentation then focussed on model selection and predictive performance where there are a large number of highly correlated covariates, and the sample is larger than the number of those. He used the stochastic variable selection method of George and McCulloch. The advantages of SSVS over BMA is that it can fit a wide variety of models, is an efficient sampling-based method and unlike BMA avoids the potentially overwhelming problem of calculating the posterior probabilities of all 2M subsets of models. SSVS like Lasso works well when the covariates are highly correlated, and allows users to indicate which models are more likely.

He then discussed a problem where all the covariates are not linearly related to Y, with an application to the Eucalyptus tenuiramis tree in Tasmania, and requiring spatial information in the model. He then showed how he used SSVS to model the rainfall anomaly in SE Australia.

Both during the talk, and at the end there was enthusiastic questioning from the audience.

After the talk, the audience enjoyed a buffet dinner at University House, ANU.

Ray Lindsay,
with input from Geoff Lee.



Australian Statistical Conference
in conjunction with the Institute of
Mathematical Statistics Annual Meeting

7 - 10 July 2014
Australian Technology Park, Sydney

ims SSAI

On behalf of the Statistical Society of Australia and the Institute of Mathematical Statistics, the Organising Committee invites you to register for the joint

Australian Statistical Conference and IMS Annual Meeting

7-10 July 2014 in Sydney

Keynote speakers include:

- Professor Terry Speed, *2013 winner of the Prime Ministers Award for Science*
- Professor Adrian Baddeley, *CSIRO & University of Western Australia*
- Professor Sheila Bird, *Cambridge University*
- Professor James Brown, *University of Technology*
- Bob Rodriguez, *SAS Institute*
- Professor Terry Lyons (Schramm Lecturer), *University of Oxford*
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TIES2014

the 24th annual conference of the International Environmetrics Society

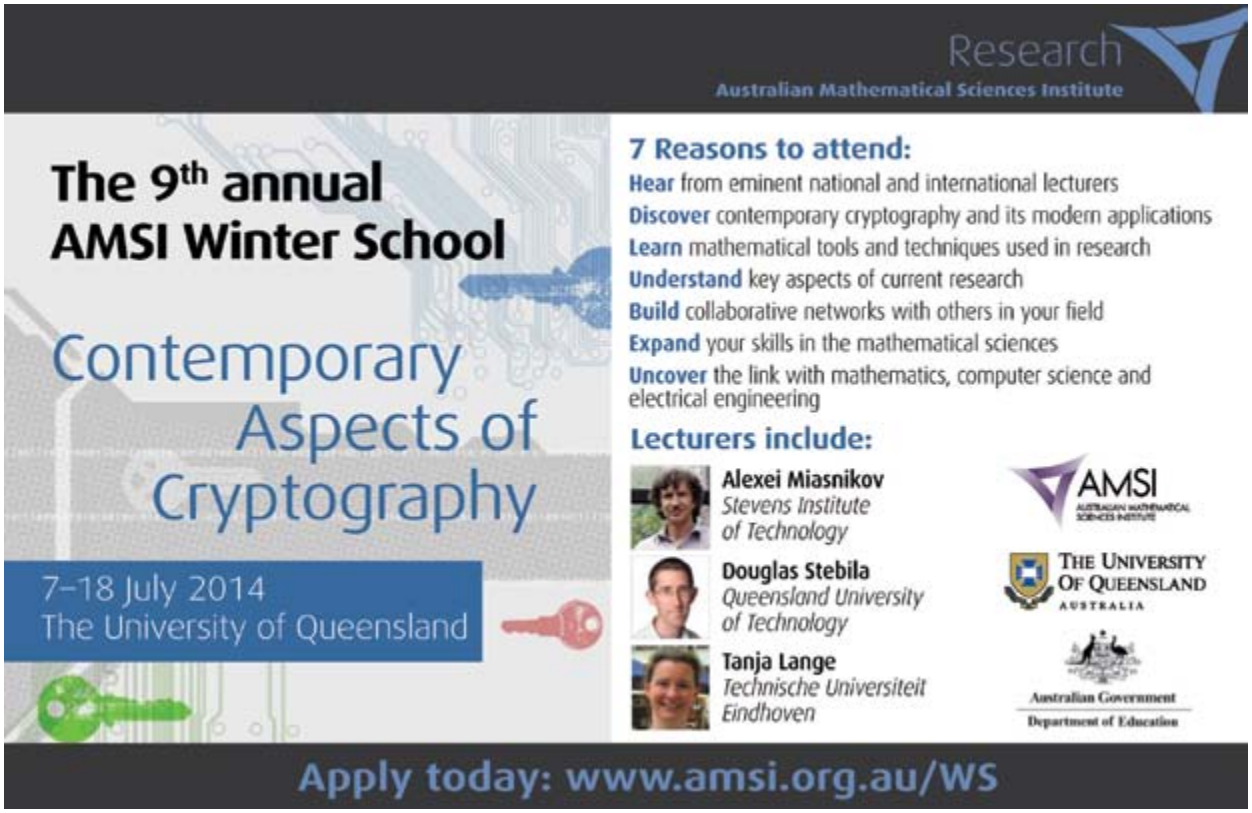
TIES2014, the 24th annual conference of the International Environmetrics Society, will be held in Guangzhou, China from 15-18 December 2014, jointly with the division of Resources and Environment Statistics, of Chinese Association for Applied Statistics. The aim is to provide forums for international collaboration in Environmetrics and statistics theory with applications and for interdisciplinary exchanges in Environmetrics and Statistics. Details can be found from the conference webpage http://maths.gzhu.edu.cn/ties2014/.

Some key dates are

- The deadline of abstract submission is 30 September 2014.
- The acceptance of abstract will be confirmed by 15 October 2014.
- The date of early bird registration is 31 October 2014.

We are currently calling for proposals on invited paper sessions. Please send your proposal (including proposed session title; organizer's names and affiliation; proposal's description; proposal's justification; proposed speaker's names and their affiliation) to Dr Quanxi Shao at Quanxi.Shao@csiro.au by 1 July 2014.

All ISI associations are welcome to propose a special session from its society. Please contact Dr Quanxi Shao at Quanxi.Shao@csiro.au to discuss the details.



AUSTRALASIAN APPLIED STATISTICS CONFERENCE (AASC) 2014

Port Lincoln Hotel, South Australia
1 - 5 December 2014
www.aasc.org.au

Save the date

The Australasian Applied Statistics Conference is an excellent opportunity to liaise with fellow statisticians within the agricultural, biological and environmental sciences and to keep abreast of the most recent developments in statistics within this context. Join us for AASC '14 and pre-conference workshops, being held at the Port Lincoln Hotel, located on the southern tip of the amazing Eyre Peninsula, on 1 - 5 December 2014. The Eyre Peninsula is a proud world leader in sustainable fisheries and a region of outstanding biodiversity. Port Lincoln is an excellent getaway destination, offering a unique and exciting range of tourist attractions, recreational activities and visitor experiences. We look forward to welcoming you to the Port Lincoln Hotel in December 2014.

AASC '14 Organising Committee

Conference Secretariat
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NOTICE

The Annual General Meetings of The Statistical Society Of Australia Inc and The Australian Statistical Publishing Association Inc. will be held on Monday 7 July 2014 at 12:45pm in the Theatre, Australian Technology Park, Sydney

SSAI ANNUAL GENERAL MEETING - AGENDA

1. Apologies and Proxies

   Proxies must be given in writing as per form available on the SSAI website. Proxy forms must be received by the SSAI Executive Officer for no later than 3 July 2014.

2. Confirmation of the Minutes - Minutes of the previous meeting are available on the SSAI website.
3. Matters arising
4. Reports

   4.1 President

   4.2 Treasurer

5. Conferences

   5.1 ASC 2014

   5.2 ASC 2016

6. Election of Section Chairs

Nominations for Section Chairs should be received at the SSAI office no later than 3 July 2014. Nomination Forms are available on the SSAI website. All nominations require a seconder and a statement from the nominee that she or he is prepared to stand.

7. Appointment of signatories
8. Other business
9. Time and place of next meeting

ASPAI ANNUAL GENERAL MEETING - AGENDA

1. Apologies and Proxies

Proxies must be given in writing as per form available on the SSAI website. Proxy forms must be received by the SSAI Executive Officer no later than 3 July 2014.

2. Confirmation of the Minutes - Minutes of the previous meeting are available on the SSAI website.
3. Matters arising
4. Presentation of the Annual Report by the Editor of the Australian and New Zealand Journal of Statistics
5. Treasurer's Report
6. Appointment of signatories
7. Other business
8. Time and place of next meeting

MEMBER NEWS - BRONWYN HARCH

Later this year, Bronwyn Harch will become Professor and Deputy Director Research for the Institute of Future Environments and Assistant Dean of the Science and Engineering Faculty at the Queensland University of Technology (QUT).


Bronwyn Harch

Bronwyn joined CSIRO in 1995 as a research statistician, and has held positions of research leadership in agriculture/environmental informatics since mid-2005. Following a spell as Deputy Director of the Sustainable Agriculture Flagship, Bronwyn became Chief of CSIRO Mathematics, Informatics and Statistics in 2012, and when this combined with ICT was made the Chief of CSIRO Computational Informatics Division. During her time with CSIRO, Dr Harch made a significant contribution in the area of statistical design for landscape-scale sampling protocols and monitoring programs, as well as the statistical modelling of spatio-temporal agri-environmental systems.

Bronwyn is also a Visiting Professor at the National Administration of Surveying, Mapping and Geoinformation, China, an Adjunct Professor at Griffith University, and an Honorary Professorial Fellow, Faculty of Engineering and Information Sciences, University of Wollongong. She is an elected Fellow of the Academy of Technological Sciences and Engineering (FTSE) and won the ICT Outstanding Achievement Award at the Women in Technology Awards (2010). She is also President of The International Environmetrics Society (an Association of the International Statistical Institute).

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OBITUARY – RICHARD MORTON

Richard Morton

Richard Morton was born in Pentlow, Essex, on 28 September 1939, the oldest of three sons to Max and Dorothy Morton. Max was a farmer and Dorothy was an artist and teacher. He was extremely short-sighted and also had a squint, and the early prognosis was that he would go blind at some point. Fortunately an ophthalmologist in London rescued his sight, and while his vision remained a challenge he retained enough sight to have a fulfilling career and a rich personal life.

Both Richard's parents were communists and Richard joined the Young Communist League. Like many others he left disillusioned in 1956 following Krushchev's denunciation of Stalin and the Soviet invasion of Hungary.

Richard was a boarder at St Christopher's School, Letchworth, a progressive coeducational school. Its atmosphere of freedom with responsibility had a profound and lasting influence of his view of life. He then completed a B.Sc at the University of Birmingham (1960), a Certificate of Education at the University of London (1961) and a Diploma in Statistics at Aberystwyth under Denis Lindley (1962).

In 1964 Richard spent a year visiting the Statistics Department at Berkeley. He was quietly proud that his communist background made getting a US visa for the visit difficult. Richard then took up a lectureship in Statistics at the University of Manchester in 1965 and began publishing in Control Theory under the influence of Peter Whittle. It was a turbulent time – Richard had three disjoint sets of colleagues in his first five years – which later stabilised due to the strenuous efforts of Joe Gani, who established the Manchester-Sheffield School of Probability and Statistics in which Richard was promoted to Senior Lecturer.

When Joe became the Chief of the CSIRO Division of Mathematics and Statistics (DMS) in 1974 he invited Richard to visit Australia. Richard spent a year in 1976-7 with the Division in Canberra, where he enjoyed the new challenges of applied statistical problems raised during collaboration with other CSIRO scientists. This led him to join DMS in 1978 and begin a remarkably productive career as a consultant statistician who also developed significant new statistical methodology. From that date he wrote over 80 papers, mostly in collaboration with CSIRO scientists, and over 110 reports for his collaborators and for externally funded projects.

During his time in CSIRO Richard's research interests and publications included Generalized Linear Models (GLMs) with nested strata of variation (now a part of Generalized Linear Mixed Models), Generalized Additive Models (GAMs) with correlated errors, Functional and Structural Relationships and Estimating Equations. His particular genius, though, was to apply this new theory back to the practical scientific problems from which it had originated, and so to help many colleagues extract useful information and important conclusions from their field and laboratory experiments. To sit in DMS Work-in-Progress meetings and listen to Richard describe how he was teasing structure out of an apparently chaotic set of data and developing models that reflected this structure was an education and a pleasure.

The work that Richard was particularly proud of was: his analysis of insect trap catches using GLMs with nested strata; his GAM methodology for analysis of water quality trends with correlated errors which has become the analysis

> Continued on next page

standard for the Murray-Darling Basin Commission; his modelling of plant development rates; and his work on the theory of estimating equations. But the main tribute to his achievements is the number of scientists he helped in significant ways. To show the breadth of this help, Richard's statistical consulting activities between 2000 and his retirement in 2007 included: refinements and applications of his water quality measurement methodology; extrapolation of toxicity estimates to unmeasured combinations of species and toxin; prediction of ovulation in cattle; prediction of blowfly strike in sheep; modelling bacterial infestations in shellfish; and modelling and analysis of tuna population age composition data.

After 2007 Richard did not really retire; he just came to work less. From 2007 to 2010 he was a Post Retirement Fellow and could be relied on to be at his desk three days each week. In addition to finishing up several incomplete projects, he developed and presented training courses. He had a strong desire to pass on his considerable knowledge and experience to colleagues, and it gave him great satisfaction to deliver his courses to CSIRO scientists in many locations. From 2010 he became honorary, which simply meant he worked shorter days but was generally still at work three days each week, even in the last 12 months or so when it was clear he was grappling with some health issues.

Throughout his working life Richard could be relied on for his consistency and friendliness. He kept regular hours and worked hard during those hours, seldom taking any work home. He was recognisable by his jacket and tie in winter and his batik short-sleeved shirts in summer. He helped us all maintain the great English tradition of morning and afternoon teas, and would round up everyone at 10am and 3pm without fail. Teatimes are not the same without him.

Richard had a very clear way of thinking about problems – he once described how he 'saw' statistical data as if they made three-dimensional structures - and was excellent at focusing on the problem at hand. Complementing this, he was generous with his time so was a valuable source of advice for his statistical colleagues. He was never at ease with hierarchies, bureaucracy and routine administration. He approached the inevitable administrative tasks in CSIRO by attempting to "bundle them away" with minimum time and fuss.

Richard's personal life was characterised by a strong sense of social justice. He was very proud of his family and enjoyed all the time spent with them. He maintained a strong interest in music, being an active piano player and singing in a choir in his retirement. For much of his life he played chess and bridge regularly and successfully. He was a very keen traveller and visited many exotic locations. And he loved a good red wine. With his poor eyesight Richard could never drive, so instead he used to cycle. Colleagues had some anxiety about this, and knew not to honk the car horn and wave as they drove past as he could not see who it was and would only get distracted. On one occasion he fell off his bike because a piece of wood got stuck in the spokes of the wheel. He sustained minor injuries and a knock on the head, with some temporary loss of memory. When he returned to work he could not remember how he proved a theorem he had put in for typing and was most frustrated at the effort required to understand the proof again!

Richard died unexpectedly on 1 December 2013, although he had been in poor health for several weeks. He is survived by his former wife Helen, children Madu, Pratap and Suzannah, step-daughter Justine and 10 grandchildren.

Mark Westcott and Warren Müller

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INSURANCE ADVISERNET

SSAI GOLDEN JUBILEE TRAVEL GRANT

to provide overseas travel funds to SSAI student members, who can prove consecutive SSAI membership for a minimum of two years.

Last year the SSAI introduced a travel grant that offers limited travel funds to assist *student members* of the SSAI to attend overseas conferences at which they present a paper or poster.

A maximum of $1000 is available per application, limited to a single trip during the course of the student's studies. Students will not be supported in their first year of study and will have had to be members of the Society for at least 2 years prior to the application deadline. Applications are required to be lodged in advance of travelling. In exceptional circumstances an application can be for post-conference support, but the application will then have to be made within 1 month of returning and the 2 year mandatory membership period prior to departure must still be met. Exceptional circumstances are limited to unforeseeable student out of pocket expenses arising from other funding sources not fulfilling their obligation or changes to the trip that could not have been avoided.

A complete application will consist of

- Information on the conference and its importance to student's work (2-3 lines)
- Details of the paper/s/poster student wants to present at the conference
- A list of other funds sought or promised, including student's home institution
- Student's out of pocket expenses expected
- Any other supporting material student feels is necessary
- A letter of support SIGNED by one of student's supervisors AND student's Departmental Head
- Student's CV

The application deadline is 31 March 2015.

If successful the student member is required to produce original receipts for amounts of equal or greater value than the grant. These receipts will be returned to the student marked with how much has been reimbursed. The student will therefore still be able to use the receipts for proof of attendance or to claim any funding shortfall from other organisations. The student member will also need to supply a report of his or her involvement in the conference to be published in the SSAI newsletter. This report should confirm the actual travel details and papers presented.

Recipients of the grant are asked to acknowledge the SSAI's support in the presentations and in any published version of the paper.

One travel grant is available per year. Assuming that more than one application will be received per year, either the Executive Committee or a special committee would help with the selection process.

For more information or to apply, please contact the SSAI Office eo@statsoc.org.

With this travel grant program the SSAI seeks to underline its objective to further the study, application and good practice of statistical theory and methods in all branches of learning and enterprise. It has been implemented to confirm to members that the SSAI is willing to support student statisticians and their budding careers.

FROM THE SSAI OFFICE

Marie-Louise Rankin

By the time you read this newsletter, almost half of 2014 is over already and as always I ask myself where the time has been.

I had a lot of fun planning and organising the webinars on "How to get that job!" with Katrina Howard and "The Nine Secrets every Consultant Should Know!" with Cindy Tonkin. Going by the record registration numbers both webinars were a huge success. Katrina has already offered to present another webinar on jobs of the future and we just need to agree on a date. I have added links to Katrina's and Cindy's websites to our website:

http://www.statsoc.org.au/careers-accreditation/careers/katrina-howard-career-coach/

http://www.statsoc.org.au/careers-accreditation/careers/cindy-tonkin-consultants-consultant/

Working with Katrina and Cindy was a pleasure and if you are ever in need of some career advice, I highly recommend these professionals. I'd also like to point out that none of our webinar speakers get paid by SSAI. We are lucky that these busy people are still willing to donate their time.

Still on the subject of careers: We are currently thinking about the introduction of a Job Board on our website. If this comes to fruition, not only will you be able to place and read job advertisements for statisticians on our own website, but you will be able to upload your resume anonymously and hopefully catch the eye of someone who is looking for a competent statistician. Watch this space!

Our directory of Accredited Statisticians is now up and running and I'd like to encourage all our AStat accredited statisticians to log in to the SSAI website and fill in their particular areas of expertise.

ASC2014-IMS is only around the corner and I will be representing the society at the SSAI stand. If you are attending the conference and you have a moment, please come and say "hello". I always love chatting with our members. And if you have the opportunity to speak to non-members about what SSAI does, please do. We have included a hardcopy application form in this newsletter for anyone who decides that they'd like to join.

Michael Adena of Datalytics has generously sponsored the printing of this newsletter, so that conference attendees can receive a hardcopy issue and see what SSAI is up to. Thank you, Michael!

During the conference I'll try to upload some photographs to the SSAI Facebook page (https://www.facebook.com/pages/Statistical-Society-of-Australia-Inc/186936994713723), so if you can't make it to the conference, you can still catch a glimpse of the big event…and of course you'll be able to read all about it in the September newsletter!

So, hopefully, see you at ASC2014!

Marie-Louise Rankin

katrinahoward
COACHING AND CONNECTING FOR CHANGE

Coaching and Connecting for Change

As an experienced and qualified Career Development professional (counsellor, trainer and coach) I facilitate a practical and positive process for individuals to plan and navigate the next transition of their career.

With targeted resources, exercises and discussions, I design and deliver engaging coaching sessions to help clients' clarify their strengths, values, skills and interests and create clear goals and actions to achieve positive career engagement and development.

I draw from established coaching modalities, psychometric assessments and industry knowledge to evaluate preferred behavioral traits, interests, working styles and trends. These can quickly identify a person's ideal "Career Profile" and career anchors, which flow to inform an effective search strategy, tailored resume, selection criteria and articulating strengths and skills with confidence at interview.

Some benefits of engaging my coaching services . . .

- I facilitate a structured yet flexible, tailored approach to maximise each session and successfully meet your needs.
- I offer experience, practical and professional support throughout all stages of the change process helping maintain your motivation and focus
- I draw from contemporary, professional and global resources including traditional print, online and social media formats
- I also teach mindfulness and meditation exercises to enhance resilience and focus in challenging circumstances such as interviews and negotiations
- I will challenge and stretch you to fully engage, deliver and follow through on your coaching actions and goals
- I will coach you to comfortably deliver an "Elevator Pitch" when networking and interviewing, talking about your strengths and skills with confidence to get the job you want and negotiate with success

Coaching packages are tailored to suit each individual clients needs with coaching sessions taking place at my office Suite 19a, 16 National Circuit, Barton ACT.

Biography: Katrina Howard – Career Development / Executive Coach

My career spans over 20 years in London, Sydney and Canberra including senior roles in recruitment, artist management and representation, counselling, coaching and consulting before commencing my own business in 2011.

I hold a Bachelor of Counselling and Human Change and Certificate IV in Training and Assessment. I am an Accredited MBTI Facilitator and I'm currently completing a Graduate Diploma of Mindfulness integrated CBT. I am an active and Professional Member of the Career Development Association of Australia and ICF Australasia and in the past 3.5 years in Canberra, I have delivered over 1500 hours of executive career coaching to individuals at all levels, working in private and public organisations across a broad range of sectors including defence, education, arts, community, health, energy and industrial fields

As a tertiary trained and experienced counsellor and coach, I draw on proven and positive coaching methods to suit my client's unique personality and needs. I engage a practical approach to helping people clarify their career goals, direction and development to fully engage with and enjoy their work. I facilitate a process which helps people to understand their strengths, purpose and potential and go on to create positive change for their careers, relationships and wellbeing.

In 2009, I co-created ***Managing the Madness,*** a 6 week mindfulness group training program, which is delivered each term through Live Well Spa & Wellness Centre in Manuka (www.livewellnaturally.com.au). My interests include travel, film, reading, exercise, family and friends.

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CANBERRA BRANCH NEWS

The Canberra Branch offers prizes to top students at both the Australian National University and the University of Canberra.

At the University of Canberra, a prize-giving ceremony was held in April for all prize-winners from the Faculty of Education, Science, Technology & Mathematics. Ashleigh Rance was awarded the undergraduate prizefor the graduating student with the best results in advanced level Statistics units. Darren Richards was awarded the graduate prizefor the student graduating with the best results in the Graduate Diploma in Statistics.

The Branch congratulates the winners and wishes them all the best in their future statistical endeavours.

Alice Richardson
Mathematics & Statistics Academic Program, University of Canberra.

Darren Richards and Ray Lindsay

QUEENSLAND BRANCH NEWS

Annual General Meeting

Presentation: An Example of GPU Parallel Processing and Statistical Computing

The 2014 Annual General Meeting of the Queensland Branch was held on 13 March at the Gardens Point Campus of Queensland University of Technology (QUT). The current President (Dr Helen Johnson), Secretary (Tania Patrao) and Treasurer (Dr Nicole White) were re-elected for another term. Following the meeting, Dr Gentry White gave a presentation on the shared history of graphical computing and statistics. Dr White is a Senior Research Fellow in the Mathematical Sciences School in the Science and Engineering Faculty at QUT. His research is focused on graphical processing units (GPU) parallel processing for statistical modelling and models for terrorist activity. In the presentation, Dr White described how computing and statistics have gone hand in hand since R.A. Fisher first computed tables on his Millionaire at the Rothamsted Experimental Station. Both sciences grew up in the twentieth century and now, at the beginning of this century, the advent of cheap and powerful GPUs offers access to large-scale parallel processing power on a grand scale. For example, likelihood estimation with GPUs can run more than 200 times faster than with a central processing unit. Dr White used the example of terrorist activity in Columbia to illustrate the use of GPU parallel processing for statistical modelling of over-dispersed data.

Gentry White

Elaine Pascoe

LOOKING FOR A JOB?

For a listing of current statistical vacancies in Australia and New Zealand visit:

http://www.statsci.org/jobs

Do you have a job to advertise on the website?

Email a position description to eo@statsoc.org.au. Listing is free!

SOUTH AUSTRALIAN BRANCH NEWS

Logistic Regression for Dichotomized Counts

John Preisser

It was a pleasure to have Professor John Preisser from the Department of Biostatistics, University of North Carolina, U.S.A give a talk to the SA Branch of the society in late March. John was in Australia to give a keynote talk at the 6th International Meeting on Methodological Issues in Oral Health Research held at the National Wine Centre in Adelaide. The conference was organised by the Australian Research Centre for Population Oral Health (ARCPOH) which is part of the School of Dentistry of the University of Adelaide. John drew a large multidisciplinary audience which added to the status of the event.

Oral health researchers commonly quantify dental caries as a count variable of the number of teeth (t) or tooth surfaces (s) with carious lesions (d=decay) possibly including missing (m) and/or filled (f) teeth or surfaces (e.g., dmft, DS, etc.). Sometimes there is interest in a dichotomized outcome indicating whether a count variable is positive or zero. Examples include modelling risk factors for the prevalence of dental caries (the proportion of individuals in a population with any dental caries), and assessing risk factors in observational studies or interventions in clinical trials for the incidence of dental caries (the proportion of individuals in a population who develop dental caries over time). In these situations, dental researchers record the number of teeth or surfaces with carious lesions, then reduce the count variable to a dichotomy. Under this scenario, the application of ordinary logistic regression may result in efficiency loss, which is quantifiable under an assumed model for the counts. To address the problem, a two-part shared-parameter hurdle model to quantify the amount of efficiency loss due to dichotomization, and to give more efficient estimation of log odds ratio parameters relating to overall effects of covariates on the dichotomized outcome was proposed.

The motivating example was the Caries Clinical Trial in Lanarkshire Scotland (Stephen et. al.), from the International Dental Journal (1994) conducted from 1988 to 1992. The three year double-blind caries incidence trial (n=4,294 children aged 11-12 years) compared anticaries efficacy of three toothpaste formulations after three years follow-up (N=3517, 82%). ANOVA was applied to the caries index (that is the number of decayed, missing and filled tooth surfaces (DMFS) and showed sodium fluoride and sodium fluoride plus sodium trimetaphosphate to be superior to sodium monofluorophosphate.

John's analysis goal using the Lanarkshire trial data assumed interest is in the dichotomized outcome indicating whether the caries count is positive or zero. Further, the caries count is untreated incident caries as measured by the number of decayed tooth surfaces DS. The principal question addressed was the following: Are there any significant differences among the three toothpaste formulations after two years with respect to the incidence of dental caries, defined by the dichotomy indicating whether or not DS is greater than zero? While ordinary logistic regression (OLR) is a natural approach, John sought to utilize both the many zero caries counts and long tails of positive counts to sharpen inferences on odds ratios describing the relative effects of the three toothpastes.

The first stage of the hurdle model is a binary process for whether the count is positive (specifically, crosses the hurdle of zero). The second stage expresses the probability function for the positive counts based on a zero-truncated distribution. After giving the technical detail for the Poisson hurdle model with added zeroes John discussed the form of the distinct parameter and shared –parameter hurdle models, as well two versions of the proposed zero-altered model for dichotomies, the ZAP-logist (Poisson) and ZANB-logist (negative binomial).

In terms of asymptotic relative efficiency, large efficiency gains are possible with shared parameter models. For example, under a model specification motivated by the Lanarkshire trial, ZANB-logist gives asymptotic variance that is 43.4% smaller than OLR. Correspondingly, the standard error is reduced by 25%. Simulations were used to compare power and Type I error. John noted that mis-specifying the model as ZAP-logist when the true model is ZANB-logist may inflate Type I error. Wald tests support use of the shared parameter model relative to the distinct parameter model for both ZAP and ZANB models in the Scottish caries trial. Due to overdispersed data the results did not support use of the ZAP-logist model and so indicated choosing ZANB-logist as the final model.

Interpretations of the Odds ratios (95% confidence intervals) for treatment effects in Lanarkshire caries trial based on ZANB-logist were that children using sodium fluoride toothpaste have exp(-0.17) = 0.84 (95%CI : 0.75, 0.94) times the odds of having any new caries at the two year exam compared to children using sodium monofluorophosphate toothpaste, and that children using sodium fluoride plus sodium trimetaphosphate toothpaste have exp(-0.17) = 0.84 (95%CI : 0.73, 0.96) times the odds of having any new caries at the two year exam compared to children using sodium monofluorophosphate toothpaste. Variance reduction was achieved with the first of these treatment effects being not statistically significant at the 0.05 level under the OLR model.

The main points from John's talk were that the efficiency loss due to applying ordinary logistic regression to dichotomized where counts may be large. The use of ZAP-logist and ZANB-logist may increase efficiency. The validity of results depends upon appropriate model selection. Inflation of Type I error may arise from using ZAP-logist when the ZANB-logist is true and ZANB-logist may fail to converge, particularly when ZAP-logist is true. These models could be extended to clustered or longitudinal settings (e.g., random effects).

Paul Sutcliffe

The use of SEM to examine adiposity and pre-clinical markers of atherosclerosis in young adults.

The presenter at the Annual General Meeting of the South Australian Branch held in March was outgoing President, A/Prof Richard Woodman, Director of the Flinders Centre for Epidemiology and Biostatistics, Faculty of Health Sciences, Flinders University.

Richard began his presentation with a discussion of the SPLASH longitudinal study, which ran from 1985 until 2002. A total of 1568 children (803 boys, 765 girls) were recruited at age 9 years in 1985. In a subset of children, carotid artery intima-media thickness (IMT) was measured by ultrasound; this was the primary outcome of interest in Richard's work. Other clinical measurements were also made and bloods collected from some of the study participants. In all, 81 children completed all study measurements and represent the analysis set subsequently discussed by Richard.

Richard Woodman

Richard presented a theoretical model of how a range of risk factors that included blood pressure, lipids, glucose and insulin markers, fitness, arterial stiffness, endothelial function, and smooth muscle function could affect IMT. There is considerable complexity in the biological interactions between the various risk factors, so that direct and indirect effects of the risk factors on IMT were plausible. For this reason, structural equation modelling (SEM) was an attractive approach to the analyses. Richard presented a brief overview of the key features of SEM.

Richard discussed a range of underlying constructs, hypothesised by the research team, that were based on the collected variables. He then presented some examples of conceptual causal diagrams for different constructs and how each construct could directly and/or indirectly have an effect of IMT. The translation of these hypothesised pathways into a consolidated causal diagram was then outlined.

One-stage and two-stage approaches to building a structural equation model were then discussed by Richard. He found that in this application, a two-stage model worked better, using the latent variables in a path analysis.

An interesting component of Richard's talk was a comparison between the results from SEM and multiple linear regression. He concluded that one of the advantages of SEM in his application was the ability to test observed and missing causal pathways. He also noted that SEM allowed for the combination of multiple correlated measurements with the removal of measurement error.

Richard's presentation concluded with a summary of the advantages and disadvantages of SEM, and some caveats for its appropriate use. He also pointed out a bug he found in Stata while he was undertaking the analyses, which StataCorp were trying to fix for him!

Lively discussion continued when Richard and other statisticians adjourned to Jasmin Indian Restaurant after the talk.

Lynne Giles

VICTORIAN BRANCH NEWS

Not dying soon enough and other actuarial quandaries

At the March meeting of the Victorian Branch, following the Branch AGM, the members were informed by a talk from Donald Campbell, a consulting actuary working for the Heron Partnership, on some of the problems faced by actuaries.

Donald began by defining an actuary as a professional in financial risk who receives certification as a Fellow of the relevant national professional association (here the Institute of Actuaries of Australia) after successfully completing a series of notoriously demanding exams. Nearly 60% of practising actuaries work in the 'pure' actuarial fields of life and general insurance and superannuation, with the remainder active not only in the directly financial fields of funds management and banking, but also in areas requiring application of similar analytical skills, including modelling of energy markets, analysis of loyalty points accrual, search engine optimisation, biodiversity, and so on.

The problem of the title, that of longevity, is a very real one for organisations which need actuarial services because the life span uncertainty creates the commercial risk for them of not making sufficient financial provision in the cases they are planning for. The key basis for actuarial estimates is the life table—in particular locally the ABS published Australian Life Tables—which shows estimated age-sex specific mortality rates and expected lifetimes, and can also be summarily displayed through the mortality graph. The life table values have limitations, in that the age-specific life expectancy itself gives only a mean, not the distribution of the residual lifetime and, more importantly, the estimates do not allow for future improvements in the rate of mortality attributable to medical innovation, better public health services and infrastructure, and underlying social variables such as education, diet and wealth. Donald showed through the ABS tables how the improvement in the mortality rate has been accelerating over recent decades, and noted that the difficulty of predicting future mortality trends was central to the actuary's concerns.

Considering the issue of the financial resources likely to be required by an individual in retirement the speaker then explained that to assess "how much is enough?" the actuary needs to take into account the person's likely longevity, age at retirement, personal requirements for an adequate or comfortable lifestyle, and how this can be achieved through the alternative sources of funds: dedicated savings (superannuation), the age pension and other savings, allowing for the impact of inflation and other economic variables, and noted that people need to be encouraged and educated to evaluate these factors themselves in the light of their own circumstances. At a population level decision-makers assessing provisioning for age pension entitlements and implementing economic policy on such matters as retirement age need to consider the effects of demographic trends, including ageing populations throughout the western world and falling ratios of taxpayers to retirees, on the total demand decades into the future.

Afterwards a number of the audience proceeded to a local restaurant for further discussion over dinner with the speaker.

Michael Phillips

Happy 50th, Victoria!

L-R: Geoff Watterson, Alison Harcourt, Lyle Gurrin (current president SSA VIC).

L-R: Terry Speed, Jane Matthews, Clem Pratt.

The year was 1964.

As *The Australian* first went to print, and The Beatles held the top six spots on the Australian record charts, a group of statisticians gathered in Melbourne to form the Victorian Branch of the Statistical Society of Australia.

The inaugural meeting, held on 2 April 1964, attracted a diverse group of 77 people. They came from a remarkably wide range of organisations, including many government departments, both federal (aviation, postal, traffic, military) and state (electricity, water, forestry, roads), a range of industries (insurance, banking, chemicals, manufacturing, automotive, architecture), as well as many university departments (statistics, mathematics, economics, chemistry, education, dentistry) and CSIRO research divisions.

Prof. Evan Williams, elected as the first president of the Branch, presented a talk at this meeting on 'The Future of Statistical Practice'. His thesis was that the standing of the profession depends on the **quality of its practice**, and that this can be best advanced by **thoroughly training the practitioners**. He suggested that such training should include:

- A grounding in mathematical and statistical theory
- Experience working on practical problems with a team of experienced practitioners
- The inculcation of 'research-mindedness', the ability to identify and solve new problems and develop them to the point of practical application.

This April, the Victorian Branch commemorated its 50th year. To honour the occasion, we were privileged to hear from Prof. Terry Speed, who was one of the attendees at the inaugural meeting in 1964 and is today one of our most respected members. Terry talked about 'big data' and the role of statisticians, a topic of much interest and concern for our profession (see page 25 for a review of the talk).

The lecture attracted more than 130 people, leaving standing room only and most likely setting an all-time record for a Victorian Branch event!

A cocktail party followed the lecture, giving us an opportunity to mingle, talk with Terry, and also meet two other distinguished guests: Alison Harcourt (née Doig) and Geoff Watterson, who were both members of the first Branch Council. We were delighted they could make it to the celebration. Terry, Alison, Geoff and two other guests, Jane Matthews and Clem Pratt, made a total of five attendees who were among those at the 1964 gathering.

Earlier on the same day, a new lecture theatre named in honour of Evan Williams was officially opened at the Department of Mathematics and Statistics, University of Melbourne. This was a fitting and timely tribute for our first Branch president. In 1964, Evan had just been appointed as the Professor of Statistics (at the University of Melbourne), succeeding Professor Maurice Belz. Evan made contributions to regression analysis, the design of experiments, multivariate analysis, and the foundations of inference. He was a generous servant to the Society, in the role of president of the Victorian Branch twice (1964 and 1979-1980), as national president 1973-1975, and editor of the Australian Journal of Statistics from 1978-1983. He was awarded an honorary life membership in 1981, and received the Pitman medal in 1993.

Damjan Vukcevic & Ian Gordon

We acknowledge the assistance of the Archives of the University of Melbourne, where early records of the Victorian Branch are stored.

TERRY SPEED SOUNDS THE ALARM ON BIG DATA

The highlight of the SSA Vic 50th anniversary celebrations (see page 25) was a special public lecture, 'Big Data: where are the statisticians?', presented by Prof. Terry Speed. Provocatively subtitled, 'Will we be celebrating 100 years of the Victorian Branch of the Statistical Society of Australia in 2064?', Terry Speed was upfront that his goal was to make us feel uncomfortable.

Hype

Over his long career, Terry has seen many fads in data analysis wax and wane. In his opinion, most did not contribute anything substantially new. For a while he thought 'Big Data' was just the latest iteration and would eventually exit the stage similarly, but he has been having second thoughts.

Interest in Big Data has grown rapidly since 2011. That it is over-hyped is beyond doubt. Last year, the advisory firm Gartner reported that Big Data has reached the 'peak of inflated expectations' according to its Hype Cycle analysis. This has attracted many companies and individuals to jump aboard and offer their Big Data products and services, with quality varying widely. Terry reviewed a few books on the subject and generally found them lacking in substance or accuracy.

Reality

Despite the lack of rigour, or even a clear consensus on a definition, Terry told us that Big Data is *real*.

Firstly, this is true in its most literal sense: many new sources of data now exist which are large in volume, complexity, or some other aspect. Companies such as Google and Amazon analyse such data as a key part of their business. However, this was not the focus of his talk.

Terry instead honed in on the political side of Big Data. In saying it was 'real', he meant that it has gained so much traction that it cannot be ignored. Many significant and substantial initiatives are being planned or already undertaken, with generous funding, after being pitched under the Big Data banner. He gave a number of examples, including some major conferences and research grants.

The big concern from Terry is that they are being done with almost no involvement, or in some cases *zero* involvement, from statisticians. As he put it, 'the absence of statisticians in Big Data activities is striking (to a statistician)'.

The Big Data movement has caught many of us by surprise. Big Data centres and schools are springing up around the world, and we usually never hear a word of it until it has happened. The speed at which this is happening is causing significant alarm, especially amongst statisticians in the USA.

Luckily, here in Australia the situation is not nearly as dire. At least, not yet. But Terry warned us not to be complacent. Can you imagine your local university announcing a Big Data institute? Terry said it will happen. Sooner than we think. And we will be the last to know.

Terry Speed talks about Big Data to a record audience.

Why?

What has led to our systematic exclusion?

This is a big question and Terry didn't pretend to know the answers, but did offer a number of suggestions:

- Perhaps many problems in Big Data are (currently) **poorly defined**, and we tend to shy away from them?
- Perhaps our profession is **not well understood** by society at large, and is therefore consistently excluded, either deliberately or through ignorance? (Terry wondered if the 'lies, damned lies and statistics' jibe has taken root and damned us.)
- Perhaps many of us **lack the relevant skills or experience** to get involved, whether these be in computation, marketing or working in large teams?
- Perhaps we are reluctant to work on anything too **highly specific**? (Terry quoted from *Applied Statistics* by Cox & Snell (1981), where 'statistical analysis' is said to only deal with methods that are 'not highly specific to particular fields of study'.)
- Perhaps we just happen to be particularly **disconnected** from the emerging 'data science' community, who are almost synonymous with Big Data in the eyes of the media and policymakers?

Terry noted that many projects being presented at Big Data conferences do not actually feature a 'big' dataset. It was just 'small' data showcased in a new forum. Correspondingly, some of us (statisticians) are already involved in analysing 'big' datasets, but without necessarily adopting the marketing gloss. Are we just not getting the word out there?

Furthermore, Big Data isn't new to statistics. Starting in the 1990s, various groups have tackled problems in computational statistics and the analysis of 'huge' or 'massive data sets'. Terry showed us papers and conferences from that era. Unfortunately, these efforts never gained traction and entered mainstream practice. Perhaps they were ahead of their time?

> Continued on next page

What should we do?

This is the hardest question of all.

Again, Terry did not offer solutions. Instead, he listed what he saw as important skills required for being involved in Big Data and Data Science:

- interpersonal, leadership and communication skills
- computational skills
- knowledge of relevant theory
- solid understanding of the subject matter
- critical thinking and common sense, when looking at data (which we often think of as being the "statisticians' advantage").

Terry asked if we would all be willing to learn and promote these skills? Whether we are willing to change how we train and identify ourselves 'in order to play a much larger role in the revolution going on around us, not currently in our name?'

Would we support changing our name from Statistics to Data Science? (Terry was clearly trying to push us out of our comfort zone!)

Some of the questions following the lecture were about what this entails for how we educate statisticians. The advice from Terry was clear: we should expose students to real statistical problems, which require creativity and insight, not just blind application of standard routines. Furthermore, computational skills should be a core part of the curriculum. These insights are not necessarily new. Nevertheless, they present us with a challenge of increasing importance. Can we reform our teaching practices before it is too late?

Closing thoughts

The timing of this talk couldn't have been more appropriate. We can look back 50 years and see that the aims of the Society are still as relevant as ever. In his first talk to the Victorian Branch, Evan Williams emphasised the importance of practical experience (see page 25). How does statistical practice look today? Many things have certainly changed and we need to ensure we keep up.

This was a Big Lecture from Terry.

Many in the audience later remarked that this has opened their eyes and that this issue is one that cannot be ignored.

Terry never defined Big Data. He didn't offer us easy answers or magic solutions. But he achieved something important. He broke the silence. He gave us permission to face up to this Big issue.

Damjan Vukcevic

BIOMETRICS BY THE CANALS

From 1 to 5 December 2013, around 130 local, Australasian regional and international members of the International Biometric Society (many of the regional members also being members of the SSAI or NZSA) descended on Mandurah, about an hour's drive south of Perth, for the International Biometric Society (IBS) Australasian Regional Conference, *Biometrics by the Canals*. Situated 'on the Canals' (as the conference name suggests), the venue was picturesque, and visitors were able to experience the wonderful Perth summer weather and Mandurah views at their best, including some unplanned, unexpected and much loved dolphin sightings from the outdoor dining area during tea breaks and lunch.

In addition to the natural wonders, there was of course the serious side, and all participants were treated to an enjoyable, diverse and inspiring week of workshops, talks and discussions in a wide range of areas in the biometrics field. For those who are unaware, the IBS is devoted to the development and application of statistical and mathematical theory and methods in the Biosciences, including agriculture, biomedical science and public health, ecology, environmental sciences, forestry, and allied disciplines, and its membership includes statisticians, mathematicians, biological scientists, and others devoted to interdisciplinary efforts in advancing the collection and interpretation of information in the biosciences.

The Conference commenced with two short courses on the first Sunday – Vector Generalised Linear and Additive Models, presented by Thomas Yee, and Statistics for Spatio-Temporal Data, presented by Noel Cressie – followed by welcome drinks.

Invited speakers to the conference included Noel Cressie, Ian James, Alan Welsh, Thomas Yee, Christine Muller and Ric Coe, and with contributed sessions on agriculture, genetics, spatio-temporal, statistical methods, multivariate, ecology, design, Bayesian methods and clinical trials, the conference topics were certainly all encompassing, technical and applied, and, I thought, of very high quality.

The last day of the conference commenced with a showcase of the Society's two published journals (Biometrics and the Journal of Agricultural, Biological and Environmental Statistics (JABES)), providing an opportunity for four authors to present their published works in these journals, and concluded with a final plenary session presented by Martin Bland, Hans-Peter Piepho and Murray Aitken.

During the conference dinner, two ALF awards were presented to members of the IBS for the considerable contributions they have made to biometry and the IBS over their careers – Ian James, from Murdoch University, and Jeff Wood from the ANU. Both award recipients are also active supporters of the SSAI and have held numerous office positions in the National and Branch Councils of the SSAI over the years. The contributions of Ian and Jeff were espoused, and they were surely inspirational to all present.

Encouraging, motivating and developing interests and networks amongst students and those early in their career is such an important part of any profession and conferences are a great way to nurture and develop such links. The strong turnout of local and regional students at this Conference was therefore very pleasing to see. I, and many others, found their enthusiasm,

> Continued on next page

research and standard of talks and poster presentations to be quite amazing, and I understand that the students also had a most enjoyable Italian dinner out with the IBS Australasian Region President, David Baird.

On a personal note, it was pleasing to me to have the opportunity to learn more about the IBS and the common interests of the two societies, allowing us to strengthen ties between the groups – a relationship we hope to further strengthen, with plans to build on a tradition started last year of the August meeting of the SSAI WA Branch being jointly held with the IBS.

Finally, the success of the conference, both socially and intellectually, was a testament to the hard work put in by all the members of the various organising committees and the contributions of all speakers – congratulations and thanks to all involved.

Anna Munday

Female Presidents of the SSAI WA Branch: Anna Munday (current), Helen Nicol (past) and Jane Speijers (past).

Photo courtesy of Australasian Region of The International Biometrics Society.

NHMRC Clinical Trials Centre

A Practical Intermediate/Advanced Masterclass in Time-to-Event Analysis

Faculty includes:

Prof. Ian Marschner
Macquarie University & NHMRC CTC

Prof. Val Gebski
NHMRC CTC

Dr. Andrew Martin
Ms. Adrienne Kirby
Ms. Anne-Sophie Veillard
Mr. David Espinoza
Ms. Emma Gibbs
Ms. Kristy Mann
Ms. Liz Barnes
Ms. Lucy Davies
Mr. Luke Buizen
Mr. Mark Donoghoe
Dr. Rachel O'Connell

***A Practical Masterclass in Time To Event Analysis* is an intensive course aimed at biostatisticians.**

The course introduces participants to the theoretical and practical issues facing researchers who deal with time-to-event data on a regular basis and who wish to use advanced statistical techniques to answer complicated clinical questions.

Who should attend?

The course is ideally suited biostatisticians working in clinical and health research areas. Ideally, participants should be familiar with time-to-event data, have a basic understanding of proportional hazards modelling and be comfortable to be immersed in more complex theories. Clinicians with a strong understanding of time-to-event concepts may also find this course of value

Due to the nature of this course, the number of participants will be limited. We encourage early registrations so that you do not miss out!

Course emphasis

The course is designed to discuss both theory and application of simple and complex time-to-event analysis strategies. There is emphasis on the practical experience of performing analyses with discussion about advantages and pitfalls for different approaches and the interpretation of results. The course will be presented at an intermediate/advanced level.

Proposed Topics

- Graphical displays of time-to-event data
- Summary data for time-to-event data
- Comparisons of time-to-event curves
- Heavy censoring in time-to-event data
- Issues with non-proportional hazards
- Design issues for time-to-event data including sample size, power and non-compliance

Proposed Topics (cont'd)

- Proportional Hazards (PH) models including
  - Model diagnostics
  - Clustered & stratified PH models
- Time-dependent PH models
- Analysis of recurrent events using both marginal and conditional models
- Analysis of competing risks, including cumulative incidence curves, comparison of curves and various strategies of approach
- Risk score models and nomogram development

Dates

Monday, 29th Sept. - Friday, 3rd Oct. 2014

Intermediate Component (3 days)
Mon. 29th Sept., Tues. 30th Sept. & Wed. 1st Oct. 2014

Advanced Component (3 days)
Wed. 1st Oct., Thurs. 2nd Oct. & Fri. 3rd Oct. 2014

Course Fees ($AUD, includes GST)

Includes software which will be provided as part of the course, full day's catering and two social dinners.

	Days 1-5 ***Full course***	Days 1-3 ***Intermediate***	Days 3-5 ***Advanced***
Early Bird	$2,500	$1,950	$1,950
Standard	$2,800	$2,150	$2,150

Early-bird registrations must be received by close-of-business (5:00pm Sydney) on Thursday 31st July 2014
Full payment must be received by close-of-business (5:00pm Sydney) by Friday 12th September 2014

Laptops

Participants should bring their own laptop. Your software will be installed by the instructors.

Venue

Pullman Sydney Hyde Park
36 College Street
Sydney NSW 2010
Australia

For Accommodation Reservations call the hotel directly on: +61 (0)2 9361 8400

For Further Information
Email: statsMasterclasses@ctc.usyd.edu.au

The Statistical Society of Australia

Aims of the Society

- The Society's objective is to further the study, application, and good practice of statistical theory and methods in all branches of learning and enterprise
- Membership is open to Australian residents through the Branches that exist in each state (except Tasmania) and in the Australian Capital Territory. Membership-at-large is open to residents outside Australia

SSAI
Statistical Society of Australia Inc.

Want to know more?

Contact the Executive Officer at eo@statsoc.org.au

Explore the SSAI website at www.statsoc.org.au

Benefits of Membership

- Network with a large group of professionals working, researching, teaching, and studying in statistics
- Participate in SSAI Branch and national activities at member rates
- Receive four issues each of the *Australian and New Zealand Journal of Statistics* and the online *SSAI Newsletter* each year
- Participate in SSAI professional development activities by attending or leading them
- Apply for Graduate Statistician or Accredited Statistician status as endorsed by SSAI
- Participate in special interest Section activities
- Gain access to a collective of colleagues for exchanging information and informal mentoring
- Support your profession