




# STATISTICAL SOCIETY OF AUSTRALIA INCORPORATED NEWSLETTER

 **March 2010**  
Number 130

## Filling in the Missing Values: Multiple Imputation and the Magic of Applied Statistics

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**The Maurice H. Belz Lecture is an annual lecture, established by the Statistical Society to honour the work of Professor Belz in establishing and advancing the science of statistics in Australia. Maurice Belz was the Foundation Professor of Statistics at the University of Melbourne (1955 – 1963). (The SSAI website has further information.)**

The 2009 Belz Lecture was given by Professor John Carlin on 27 October. John is Director of the Clinical Epidemiology and Biostatistics Unit within the Murdoch Childrens Research Institute at the Royal Children's Hospital, Melbourne. He also holds University of Melbourne appointments in the Department of Paediatrics and School of Population Health, where he coordinates a Master of Biostatistics program as part of the Biostatistics Collaboration of Australia (BCA). Since completing a PhD in Statistics at Harvard University, John Carlin has had over 20 years experience working as a biostatistician across a wide range of medical and public health research. He has around 250 research publications, mainly in clinical and epidemiological journals. Over the last few years he has maintained a program of methodological research on methods for dealing with missing data using multiple imputation, which grew out of collaborative research in which incomplete data are a major practical problem.

The underlying theme for John's lecture was to use the case for multiple imputation (MI) to illustrate the modern challenges for good statistical practice. Missing data are a common problem in epidemiological and medical research. John provided examples from the Avon Longitudinal Study of Parents

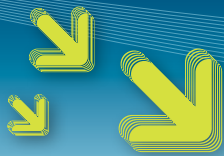


*Professor John Carlin.*

and Children (ALSPAC), the Victorian Adolescent Health Cohort Study (VAHCS) and a psychiatric randomised controlled trial, all of which demonstrated irregular patterns of response at both the unit and item level.

If only complete cases are analysed, then large numbers of cases are lost, leading to loss of precision and power. In addition, those with complete data may differ from those with incomplete data, which may lead to biased estimates of the population quantity of interest. There are many reasons for missing data, and usually these are not well understood, although the validity of any analysis depends on making some assumptions about these reasons.

Statistical models are a basic tool for answering research questions of interest, with regression models typically used. John outlined the concept of a statistical model for missingness (the DoM – "distribution of missingness"), which was introduced by Donald Rubin, from Harvard, to clarify the conditions under which valid statistical inferences may be made in the presence of missing data.



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**DEADLINE FOR NEXT ISSUE:  
10 May 2010**



Alice Richardson,  
Editor.

## Editorial

**A full set of Branch reports appear in this newsletter, showing the wide variety of events that different Branches arrange for their members.**

I was particularly interested to read of the SA talk on suicide attacks. It is a brave student of politics who presents work-in-progress to a group of statisticians! I would like to encourage other Branches to consider making room in their schedules for researchers seeking statistical directions for their research. I am aware that an Applied Statistics Group operates in Canberra to provide a forum for statisticians to discuss work-in-progress. Please write in and tell the Society what is happening in your area!

Another concept I've recently become aware of aims to deal with the overwhelming number of researchers who wish to present at conferences – the "speed talk". A whole session of five-minute talks. What about it? Has anyone been to one of these, at a statistics conference or other discipline? What was it like?

A previous issue of this newsletter carried a dialogue that occurred on ANZSTAT about "show me the model". ANZSTAT came alive recently with a dialogue about climate change models in particular. Mike Camden, Statistics NZ, submitted the following summary of that debate, including contributions from David Jones, John Maindonald and Bruce Tabor.

The conclusion that climate change is largely being driven by CO2 emissions is based on a massive literature grounded in

observations, modelling, climate physics and statistics (the last probably playing the smallest of the 4).

The point is well made that statisticians will be ill-advised to launch into this debate without first getting some reasonable grip on the underlying science. We should not add to the uninformed commentary that already has had a disturbingly large place in public debate.

For good and not-so-good reasons there is much emotion and over-reaction to these issues. Adherence to scientific processes and balanced risk assessment are the only rational ways through the morass, and should ideally be embraced by our political leaders (I can hear you groan).

Scepticism is appropriate, but denialism, being essentially propaganda, is the antithesis of science and potentially very dangerous, especially if it hijacks the political process. It should be recognised and shamed for what it is. I use the word "denialist" in a very deliberate sense. Healthy scepticism should be part of every scientist's armamentarium, along with the most dispassionate objectivity one can muster (not easy), rationality, openness to one's own errors, and adherence to the scientific method. Denialism on the other hand is something else. The Wikipedia entry does a good job of defining it:

<http://en.wikipedia.org/wiki/Denialism>.

*Alice Richardson*  
Alice Richardson  
Editor

*Michael Adena*  
Michael Adena  
Editor

## CONFERENCES AND WORKSHOPS

ISBA 10th World Meeting / 9th Valencia International Meeting on Bayesian Statistics incorporating the ISBA 10 / Valencia 9 Student Video Competition 3-8 June 2010, Benidorm, Spain  
<http://www.bayesian.org/events/isba2010/index.html>

ISBIS-2010, International Symposium for Business & Industrial Statistics 5-9 July 2010, Grand Hotel Bernardin, St. Bernardin Adriatic Resort & Convention Center, Portoroz (Portorose), Slovenia  
<http://www.action-m.com/isbis2010>

International Biometrics Conference 5-10 December 2010, Florianopolis, Brazil  
<http://www.tibs.org/Interior.aspx>

Australian Statistical Conference 2010 6-10 December 2010, Perth, WA  
<http://www.promaco.com.au/2010/asc/index.htm>

58th Session of the International Statistical Institute 21-26 August 2011, Dublin, Ireland  
<http://www.isi2011.ie/>

# President's Message

## Some Aspirational New Year Resolutions

### Dear Members

**I enjoyed some holiday time over the Christmas / New Year period, and I hope all of you did as well. The New Year is a traditional time for reflecting on the past, looking forward to the future, and making good resolutions and plans, and now that I'm back from my break, that's what I and the Central and Executive Councils of SSAI have been doing.**

In terms of reflection, last year was a challenging year for the Society, but we finished the year on a very heartening note, as I outlined in a note I sent to all members. I don't intend to dwell on the past, beyond noting once again the appreciation I have for the support of the membership, and the individuals who in a range of different ways contributed so well to seeing our Society through a difficult period. We have more work to do, but if we succeed this year as well as we finished last year, we will be in good shape as a society.

Looking forward, my own New Year resolutions are around being able to turn attention to the future of the SSAI, and making progress on the strategic directions that we have set for ourselves. There are some important steps along the way, and the likely sequence is:

**Workshop program:** Continue and grow the program of workshops, increasing the variety and range of activities in this space to meet the varied interests of our membership, and potential new membership. Alanna and Paul Sutcliffe, with the support of people from every branch, and some much appreciated individuals who are actually presenting the workshops, are working on this. I encourage those of you who have ideas or suggestions or want to be involved to get in touch with Paul or Alanna or your local branch.

**Membership drive:** One of the most crucial activities for the society over the next couple of months is the renewal of existing members, and where possible enrolment of new members. We discussed this at the last two Central Council meetings,

and Teresa Dickinson has been working with nominated membership officers from each branch to implement the proposals. Don't leave it till the last minute, take the initiative and renew your membership now, if you haven't already! In fact, if you get the opportunity, I encourage you to talk with non member colleagues about joining the society as well. If perchance there is something missing from the SSAI activities that you'd like to see us doing, or something you are not satisfied with, please let me or your local branch know. Constructive suggestions about how we can make our society more relevant and useful to you will be greatly appreciated.

**ASC 2010** in Fremantle from 6 to 10th December 2010: The organising committee in WA, lead by Jane Speijers, have been working hard for quite a while now on this, and it is shaping up to be a really great experience. Over the last few weeks we have been examining closely the financial arrangements behind ASC 2010, and we had a very thorough discussion about them at our most recent Central Council phone meeting a few days ago. I won't run through the details, but I will say we thoroughly examined the steps we have in place to monitor the upcoming conference, and after close examination, Central Council was satisfied that we are doing all that can be done to make sure we are never again exposed to the type of events which happened in 2008. I would like to particularly thank Jane, and William Dunsmuir for their extremely thorough work on this. Of course, at its core, a successful conference is not just about finances, it is about a stimulating professional experience, about the opportunity to interact with colleagues, about the opportunity to learn new things and share your own experiences and learnings, and importantly, a time to have some fun, to catch up with old friends and make new ones. On all those fronts ASC 2010 is looking good, and I look forward to seeing many of you there.

*Continued on page 4 >>*

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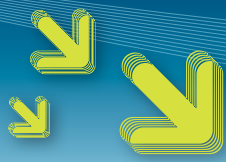
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Further contact details for Society Secretaries and Section Chairs can be obtained by contacting the Society on (02) 6251 3647.



## President Message (Cont.)

*President message continued >>*

**ASC 2012, 2014:** As I learnt a few years ago, successful conferences don't just happen, there is a lot of hard (but rewarding) work behind the scenes to be done, and we have already started the early planning for our next two conferences. 2012 is planned for Adelaide, and 2014 is likely to be a big affair, in Sydney, in collaboration with a major international society. You'll hear more on those as planning progresses, but now is the time to make any suggestions you have. Our society is here to meet the needs of our members, and while at the end of the day, the executive needs to make some decisions and act on them, the more information and ideas the we have about what you'd like to see in a conference, the better we can work towards that goal. Don't leave it to someone else, pass your ideas on now.

**Journals and Accreditation:** At this point in time, these activities are running well and in good hands, so my New Year resolution was to make sure we continue to support those people who are doing a good job, and otherwise keep out of their way!

### **Greater visibility for Branch and Section activities amongst the membership:**

One of the strengths the SSAI is that, like Australia itself, we are actually a federation of separate local branches. There is an enormous amount of activity under way once you start to learn, as I am, what all the local branches and the SSAI itself are doing, and I'm keen to make that even more visible to everyone, so you can get the full value from your membership. In the next few months I intend to start to draw together an overall picture of the activities we have planned, and make them visible via our website. After discussion at Central Council, it seems sensible to do that in a few months, after the various branch AGMs and appointment of new branch office bearers, so I'll be coming back to this theme then. By the way, if you are interested in contributing to the running of the society, make contact with your local branch – I know there is always plenty to

do, so volunteers are always welcome, and taking on one of the councillor roles is a great way to build your networks, and do something worthwhile.

In the last year, priorities have meant that I and the Executive Council have been able to give limited attention and support to the sections of the Society. That's not as I'd like it to be – one of the strengths of our profession is the combination of a core underlying set of professional skills expertise coupled with a rich range of research questions arising from many and varied areas of application. The sections of the SSAI represent this dimension, and my resolution is to do more to work with the sections to help them contribute to the plans we make and the activities we undertake.

### **Promotion of statistics as a profession, with an important contribution to make to Australia's future:**

I regularly see reports in the newspaper and on TV, and hear items on the radio, and know that behind the headlines, statistical thinking, the collection of statistical data, the interpretation of statistical analyses, and the advances that are occurring in statistical methodology are helping move society forward. Recent examples include education (the MySchool website, and the collation and presentation of data that is behind it), climate (global warming - ranging from the initial collection and manipulation of source data through to the uncertainties in the projections being made from complex models), the global financial crisis and economic conditions generally, and of course the steady advance in understanding and treatment of health outcomes based on genetic research. Whether you agree or disagree with the policies and actions arising, statistics are central to the informed debate which is one feature of a functioning democracy.

### **Promote the importance of excellent statistical education in Australia:**

The previously-mentioned contribution by statistics to society can only happen if we continue to be a strong and vibrant profession, which attracts talented people. In a systemic sense, that has to begin early, in the school system. There is a report elsewhere in the newsletter about the efforts of a small number of SSAI members, who, with the endorsement of Central Council, gave up time over the Christmas holiday period to provide strategic comment on behalf of the SSAI to

the Australian Curriculum and Reporting Authority about their forthcoming draft of a national Curriculum for Mathematics (or Mathematics and Statistics as we believe it should be). I'll let you read that report, and here I'll just record my thanks to Eric Sowe, Nick Fisher, Helen MacGillivray, Neville Weber and Siu-Ming Tam, all of whom willingly gave of their time over the holidays, and to Brian Pink, the Australian Statistician (and my boss here at the ABS) who considers this such a strategic issue for Australia that he made personal representations about the importance of this issue. Not only is this an important issue for Australia and statistics as a profession, but it is also very pleasing to see the SSAI and its members being able to turn attention to making a difference on such an important topic.

**Conclusion:** The nature of all New Year resolutions is that some fall by the wayside. But the ones I've outlined above are so important to our society that we really shouldn't let that happen. If you've read this far, you'll probably have spotted a theme running through the report. Our society is almost entirely a community of statistical professionals, and people interested in statistical issues, run for ourselves, by ourselves. As a group and as individuals we'll get out of the society what we put into it. I encourage you all to become active in your membership of the society, whether it is simply by sending in ideas and comments, engaging in debate about what we are doing and why, turning up at branch meetings and seminars, attending courses and workshops, or by becoming involved in the running of the society in some way or another.

Enough for now, enjoy the rest of the newsletter.

**Geoff Lee**

President SSAI ■

## Filling in the Missing Values continued >>

John spoke about 3 types of DoM – missing completely at random (MCAR), missing at random (MAR), and missing not at random (MNAR). If the DoM is MAR, then it may be ignored when making inferences, though this does not mean that the missing data can be ignored – the data model needs to include all observed data including variables that are incomplete. Multiple imputation is an important practical tool for implementing ignorable missing data modeling.

John then outlined the two-stage multiple imputation approach for performing statistical inference in the presence of missing data. First, create a number ( $m$ ) of imputed data sets with each missing value filled in, then analyse each imputed (complete) dataset using standard methods, and combine the results in an appropriate way.

To create the imputed datasets, one uses a modeling process to obtain the predictive distribution for each missing value, and then draws a value for the missing data from that predictive distribution. This can be done either using a full joint model for all variables subject to missingness (uses Markov Chain Monte Carlo - refer material from Joe Schafer), or using a fully conditional specification (uses univariate regression imputation in a cycle alternating between variables that are incomplete). For the analysis, Rubin's rules of combination are used to obtain estimates by taking the average of the  $m$  separate estimates, with the variance a combination of the within and between imputation variance.

Multiple imputation can have considerable appeal – it allows the analyst to use standard methods for complete datasets, and many analyses may be performed with the same set of imputed data. Programming readily solves the challenge of managing multiple datasets. You just need to be confident of the MAR assumption!

After giving examples of MI, John noted that users can initially be nervous about "making up data" but can soon get used to it, and it seems like magic. However things can go wrong, and John gave an example of where the MI was inadequate and led to very surprising results - which were published in the BMJ. (Once a better MI

model was used, the results became more realistic.) A review of journal articles that report analysis using MI has shown that the vast majority provided minimal information on precise methods, assumptions or sensitivity analysis.

John provided some guidelines for better practice – summarise numbers and patterns of missing values for variables of interest, describe reasons for missing data (if possible), detail the assumptions made about the missing data, and provide information on the imputation modeling. If large proportions of data are imputed, compare the observed and imputed values and, where possible, compare MI results with analyses restricted to complete cases. Discuss the plausibility of the MAR assumption and if possible, examine the robustness of key inferences to departures from MAR by assuming a range of MNAR mechanisms in sensitivity analyses.

Increasing practical experience suggests that there is value in the MI approach – MI results often appear to reduce bias, especially in mean values, and reduce standard errors. John has undertaken simulation studies to test the MI approach, using both modeling processes mentioned, and these performed well when the skewness of continuous variables was attended to. John also summarized the results of MI used in ALSPAC and VAHCS.

Just before finishing, John outlined some key questions for practice – e.g., how much does MAR matter (e.g. even if MAR does not strictly apply, it may be better assuming MAR than throwing out data with missing values), and how should imputation best be performed. John concluded his most informative lecture by suggesting that a little common sense seems to go a long way!

After the presentation, about 35 members and guests joined John for dinner at the University Café in Lygon Street. This annual event appeared to be enjoyed by all, and was an excellent way to end a very successful year of seminars hosted by the SSAI Victorian Branch.

**Carol Soloff** ■

## Cover Story (Cont.)

Carol Soloff



# MASA

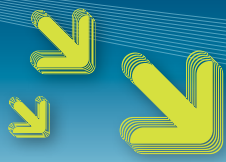
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## Conference 2010

# Australian Statistical Conference 2010

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**ASC2010 will be opened by one of Western Australia's Nobel Laureates, Professor Barry Marshall. Barry won the 2005 Nobel Prize in Physiology or Medicine with Dr Robin Warren for their remarkable and unexpected discovery that gastritis and peptic ulcer disease is caused by the bacterium *Helicobacter pylori*.**

While working as a pathologist in Perth, Robin Warren observed small curved bacteria colonizing the lower part of the stomach of patients who had been biopsied. All these patients also had inflammation in gastric mucosa close to where the bacteria were seen. In 1981 Robin and Barry Marshall, who was a young clinical fellow at Royal Perth Hospital, initiated a study of biopsies from 100 patients and Barry was able to cultivate a hitherto unknown bacterial species, *Helicobacter pylori*.

At the time of this discovery it was believed that stress and lifestyle were the major causes of peptic ulcer disease. By 1984 Barry was convinced that this was not the case but he was having trouble persuading the rest of the medical community. He realised that he needed to have an animal model but he had been unsuccessful in attempting to infect any animals. Without discussing it with the ethics committee at the hospital or, in detail, with his wife, he infected himself. In a short autobiography, Barry states that *this was one of those occasions when it would be easier to get forgiveness than permission*. Barry did manage to make himself quite ill and, fortunately for us, he was also able to treat himself.

In February 1994 the National Institutes of Health held a consensus meeting in Washington DC which ended with the statement that the key to treatment of duodenal and gastric ulcer was detection and eradication of *Helicobacter pylori*. It had been almost 15 years since Barry and Robin discovered the bacteria, a period during which they had faced funding problems, prejudice and criticism. Barry says that he felt a sense of relief that he had been able to develop an hypothesis, test it, prove it and gain official acceptance.

Barry Marshall was born in Kalgoorlie and spent his early years at Rum Jungle in the

Northern Territory and Carnarvon and Kalgoorlie in Western

Australia. He first came to fame at the age of twelve when his 18-month old sister drank some kerosene while Barry was baby-sitting. He called 000 and the story was used to publicise how to call emergency services and why you should not put poison into milk bottles.

### Jane Speijers

Chair of the Organizing Committee ASC20100

### OZCOTS 2010



The 7th Australian Conference on Teaching Statistics will be held on 9th and 10th December, 2010 as a satellite conference to ASC2010. The theme of OZCOTS 2010 is

*Building capacity in statistics education*. A joint program will be developed for the last day of ASC2010 and the first day of OZCOTS 2010.

The first OZCOTS was run in 1998 by Brian Phillips with papers by the Australian speakers from the 5th International Conference on Teaching Statistics (ICOTS) which had been held in Singapore earlier in 1998. Its success in bringing together Australians involved in teaching statistics resulted in Brian and his Melbourne colleagues organising annual OZCOTS gatherings from 1999 to 2002. In 2006 Helen MacGillivray was awarded one of the first Australian Learning and Teaching Council's Senior Fellowships, with her fellowship programme to run throughout 2008. As part of her fellowship programme, Helen revived OZCOTS with Brian's help, and ran it as a two-day satellite to the 2008 Australian Statistical Conference. The OZCOTS 2008 invited speakers were all funded as part of Helen's fellowship. OZCOTS 2008 was modelled on the successful International Association for Statistical Education's (IASE) satellite conferences to ISI Conferences, with papers in proceedings and an optional refereeing process offered to authors. The success of OZCOTS 2008 has led to OZCOTS 2010.



Bronze sponsor



The OZCOTS program will include keynote and contributed papers and forum discussion on topics across the statistical education spectrum of interest to statisticians and the statistical profession. Papers for OZCOTS 2010 will be published on the internet on an ongoing OZCOTS website

Keynote speakers are Professor Chris Wild from Auckland University and Professor Delia North from the University of KwaZulu-Natal. Professor Wild will speak on the development of visual inference in statistics education from school to generalised linear models. Chris Wild is a member of a rare crossover species. He publishes extensively in statistical methodology, particularly on response-selective and missing data problems, but also works substantively in statistics education. Chris's interests in statistics education include curricular revolution at school levels, growing university statistics programmes, and improving the penetration, quality and practical impact of statistics education at all levels. Chris has been a Council member of the International Statistical Institute, President of the International Association for Statistics Education and an Associate Editor of the *International Statistical Review*, *Biometrics*, the *Statistics Education Research Journal*, and *ANZJS*.

Professor Delia North will speak on the challenges and successes of the plans to enhance statistics capacity in South Africa amidst the transformation of the educational system, and the lessons that can be learnt for statistics everywhere.

Expressions of interest for OZCOTS 2010 should go to the website <http://www.promaco.com.au/2010/asc/> Further information is available from Helen MacGillivray, ([h.macgillivray@qut.edu.au](mailto:h.macgillivray@qut.edu.au)) or Brian Phillips ([BPhillips@groupwise.swin.edu.au](mailto:BPhillips@groupwise.swin.edu.au))

### Helen MacGillivray

Co-ordinator OZCOTS 2010

# Statistics Education in Australia:

## The Ongoing Saga of SSAI Strategic Objective 6

Statistics Education  
N I Fisher



### SUMMARY

**The SSAI has been working with the Australian Bureau of Statistics since 2002 to improve Statistics education in Australia. Finally, tangible progress is being made.**

In April 2003, SSAI launched its first Strategic Plan. Under the list of Objectives, the following text appeared:

Strategic Objective 6:	Develop and promote Statistics Curriculum in schools
Strategies:	Promote the development and adoption of a statistics course for Years 11 and 12 at school, based on the best teaching practices that can be utilised, together with appropriate training programs for teachers.
How measured:	Courses operating in all States and Territories by 2007

The impetus for this had emerged at an open meeting held during the July 2002 Australian Statistical Conference in Canberra. It was convened by the ABS, SSAI and CSIRO, and attended by employers, academics, teachers, and an Advisor to the then Federal Minister for Education, Science and Training, Brendan Nelson, to discuss the perceived crisis by employers in the numbers of people pursuing studies and careers in Statistics in Australia. The main outcome was that Dennis Trewin and Nick Fisher (respectively head of the ABS and President of SSAI) were asked to develop and implement an Action Plan.

In March 2003, a meeting funded by the ABS, and including attendees from State Education departments, Mathematics associations, teachers, and statisticians interested in Statistics education reached agreement about the desirability and feasibility of adopting a national Statistics Framework in schools.

After a range of further discussion, an appointment was secured with Minister Nelson in October 2003. A delegation comprising Dennis Trewin, Bruce Wilson (CEO, Curriculum Corporation) and Nick Fisher met Brendan Nelson and his Science Advisor Thomas Barlow, outlining our concerns and putting forward a plan for how to proceed. The Minister gave us a very good hearing. He responded by saying that he "... knew that statisticians were a dying breed" and he supported our proposal. However, he asked about our plans for the tertiary stages of education. We left with the mission of returning with a comprehensive plan for Statistics Education in Australia, for all levels from Kindergarten to Post-doctoral.

Work then commenced in consultation with a number of senior academic statisticians on the development of comprehensive draft plan, the *Australian Statistics Education System* (ASES). This was reflected in the update to the Strategic Objective in February 2004:

Strategic Objective 6:	Develop effective approaches to Statistical Education at all levels of the Australian education system
Strategies:	<p>Work with the Curriculum Corporation on the adoption of a national Statistics Framework in Australian schools, for years K – 12.</p> <p>Work with DEST, employer groups and the academic community to improve the quality of all aspects of Statistics education at both university undergraduate and graduate levels.</p> <p>Work with DEST, employer groups and the academic community to improve the Careers advice provided to prospective Statistics students, and prospective statistical employees.</p>
How measured:	<p>National Statistics Framework in place by 2007</p> <p>Plan for Universities developed and implemented.</p> <p>Careers Advisory Process developed and implemented.</p> <p>'Significantly' enhanced numbers of Australian students studying Statistics at undergraduate and graduate levels.</p> <p>'Significantly' enhanced numbers of formally qualified statisticians entering the workforce.</p>

### LOOKING FOR A JOB?

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

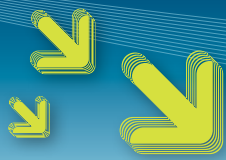
<http://www.statsci.org/jobs>

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**LISTING IS FREE!**

Continued on page 8 >>



## Statistics Education (Cont.) N I Fisher

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### Statistics education continued >>

During the development of this draft, it became apparent that some form of benchmark was needed for Statistics in universities: what was the current situation? A proposal was put to Central Council to commission a review, headed by Adrian Smith and including Ian James and David Vere-Jones. Some unfortunate delays, due in part to concerns in the academic community about the draft Terms of Reference, mean that the final report was not received by the SSAI until December 2005. A few days later, Prime Minister, John Howard, made a small reshuffle of Portfolios: Brendan Nelson was moved to Defence, and we were back to Square One.

Over the next two years, we tried a variety of initiatives to regain our position, but none was successful. Then a change of Government occurred, and a new policy announced to the effect that national schools curricula would be established in key areas of education, one of which was Mathematics. By now, Brian Pink had succeeded Dennis Trewin as Australian Statistician. In September 2008, we had a meeting with the Chairman of the Australian Curriculum, Assessment and Reporting Authority (ACARA), Barry McGaw, to present our arguments that Statistics was not a branch of Mathematics, that it deserved to be developed as a scientific subject in its own right, and that professional statisticians needed to be involved in the curriculum development and in the advisory and oversight committees. Specifically, we requested a renaming of the overall topic to **Mathematics and Statistics**.

Again, we received a good hearing. However, as months elapsed and nothing was heard, concerns arose, and a follow-up meeting was held on 9 December 2009. (By this stage, development of the Mathematics curriculum was, of course, well-advanced, as the Minister, Julia Gillard, required a release for comment early in 2010.) However, misunderstandings were resolved, we were invited to nominate two members for the ACARA Advisory Committee for Mathematics (subsequently chosen to be Siu-Ming Tam, representing the ABS, and Nick Fisher, SSAI), and we were given a very short period of time to comment on the developments to date. Here's what's happened:

- SSAI President Geoff Lee established an Ad Hoc Working Group, comprising Eric Sowe (Convenor), Nick Fisher, Siu-Ming Tam, Helen McGillivray and Neville Weber to review the materials and provide feedback on K – 10 material.
- This group received materials on 14 December, with a report due to be sent to ACARA by 11 January, so significant sacrifices were made over the holiday period. Our work was informed by years of curriculum development that had been taking place in various States of Australia, and also in New Zealand.
- Eric Sowe, Siu-Ming Tam and Nick Fisher had a meeting with ACARA representatives on 14 January, to discuss the SSAI's feedback and work out how to continue. As a consequence, Eric Sowe was invited to participate in a 2-day workshop by the writers for the Mathematics curriculum, the following week in Melbourne.
- Eric's contributions were very well received, and he was then invited to join the writer's team, the initial task being to review and develop materials for Years 11 and 12. He duly accepted (for which the SSAI is very grateful). So we now have proper representation by professional statisticians in the critical ACARA groups involved in establishing a national curriculum in Statistics.

Now our attention turns to the other part of Strategic Objective 6: Develop effective approaches to Statistical Education at tertiary levels of the Australian education system. We can only hope that the horizon is not so distant.

Many people have been involved in helping the SSAI get this far. In particular, I should like to thank (in alphabetical order), Tim Brown, Lord Robert May, Philip McCloud, Helen McGillivray, Des Nicholls, Brian Pink, Eric Sowe, Siu-Ming Tam, Dennis Trewin and Neville Weber.

**N I Fisher**

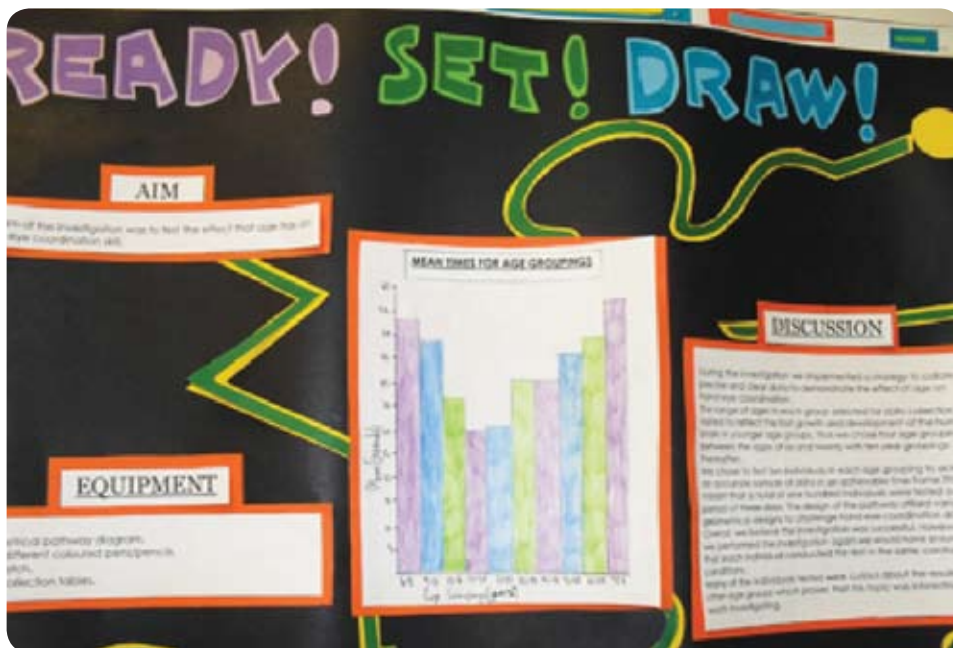
10 February 2010 ●



# Australian Statistics Poster Competition:

2009 report and call for entries in 2010

Poster Competition  
Alice Richardson



Junior Secondary: *Ready, Set, Draw* by Dimity Norbury, Emma Searle, Bundaberg State High School, QLD.

**We learn by observing the patterns and associations in the world. Statistics provides efficient methods of collecting observations and identifying patterns and associations. Statistical results and interpretations inform decision making.**


The Australian Statistics Poster Competition (ASPC) encourages students to experience learning and decision making through the collection and analysis of data. Students will observe the importance of mathematics for identifying patterns and associations which form the basis for real-world learning and decision making. The overall process of developing, conducting and reporting the data-based project will encourage students' creativity, planning, teamwork, accuracy, mathematics and computing skills, mathematical and statistical thinking, and clarity of communication. Participants will receive positive feedback through certificates, commendations for excellence and even cash prizes for state and national winners.

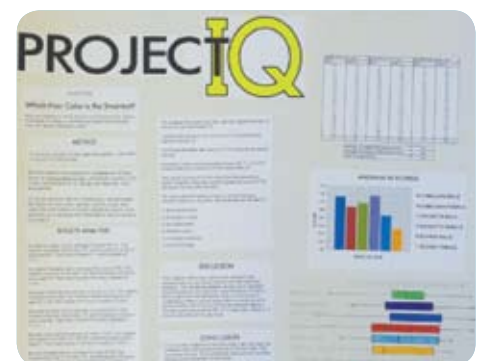
The competition is run by academics from seven universities and administered by the

Australian Mathematics Trust, a Canberra-based organisation that also runs the well-known annual Australian Mathematics Competition in schools. The Statistical Society also provides support to the ASPC and its logo appears on the ASPC website.

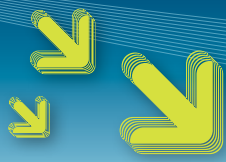
In 2009 there were 10 awards made at junior secondary level and 5 at senior secondary level. Entries were mainly received from NSW, Queensland, Victoria and WA. We hope to see entries from groups of students in all states and territories in 2010. So please bring the competition to the attention of schools in your local area. The ASPC website (<http://www.amt.edu.au/aspc.html>) contains useful information on how to enter, ideas for projects, judging criteria and so on.

We are proud to reproduce images of the winning posters in 2009 below. Congratulations to all the students involved!

**Alice Richardson.** Additional text: ASPC website. 



Senior Secondary: *Project IQ* by Chanel Gronowski, Andrea Brocklehurst, Joseph Nguyen, Good Samaritan Catholic College, NSW.



## Obituary

# Evan James Williams, B.Com., D.Sc., F.I.M.S., M.I.S.I.



*Evan James Williams, B.Com., D.Sc., F.I.M.S., M.I.S.I.*

**Evan Williams died on 27 January 2010 at a nursing home in Geelong, following a serious stroke. He was aged 92.**

Evan was born on 13 April 1917 in Hobart, Tasmania. His father, Evan senior, came from North Wales in the early 1900s to teach science at The Friends' School in Hobart. There he met his future wife Margaret; they married and had three children: Evan, Bronwen and Mary. The children were brought up within a strong Quaker tradition, and Evan retained a Christian belief through his life. Evan was regarded as the 'smart one' and he attended The Friends' School, where he excelled. He was awarded a Science Scholarship to the University at 16. Although his interest was in science, his father thought he would do better in mathematics than science and, on advice, he enrolled in an economics course majoring in mathematics and statistics.

Evan had an amazing statistical education: he was lectured by Edwin Pitman in a class of one! After graduating with a B.Com. from the University of Tasmania, he obtained a post-graduate CSIR studentship to Britain to work with Ronald Fisher and Frank Yates, at Rothamsted and at the University of London, where he also had contact with

Neyman, Pearson, and Haldane. During this time, he spent a term at Cambridge, where he attended a lecture course given by Hardy.

In 1940 he returned to Australia to work in the CSIR Biometrics Section, located in the Division of Forest Products in Melbourne, advising research workers in chemistry, physics, the biological sciences, medicine and psychology, mainly on the design and execution of experiments and the analysis and interpretation of the results. This work required considerable study of the different fields of science and their techniques. In 1954 he was awarded the degree of Doctor of Science of the University of Melbourne. He stayed at Forest Products until 1956. From 1957 to 1958 he was Visiting Professor at the North Carolina State University, where he worked with Gertrude Cox. The year of 1959 was spent with Moral Rearmament movement, travelling across Canada and the United States.

From 1960 to 1963 he was a Senior Principal Research Officer with the CSIRO Division of Mathematical Statistics in Canberra. From 1964 to 1982 he was Professor of Statistics, The University of Melbourne, with a one-year secondment in 1976 as Senior Principal Research Scientist to the CSIRO Division of Mathematics and Statistics, Melbourne.

The extent and the variety of his statistical experience gave him statistical wisdom, with theory and practice closely integrated. A reviewer of Williams' *Regression Analysis* said "The book is replete with pertinent comments on experimental and analytic procedures, which should be taken to heart by every experimenter." E.J. Williams is well known for his contributions to the theory of regression and multivariate analysis. His other published papers range from the discussion of actual problems met in practice, through design theory, estimation, and distribution theory, to the arcane doctrine of fiducial probability.

After retirement, he worked on conditional inference, pivotal inference, ancillary statistics and tests of independence.

Evan Williams was a generous servant of the Statistical Society. He was involved in the Victorian branch of the Society from day one: he was its inaugural branch president in 1964 and again president in 1979-1980. He was national president of the (then) SSA from 1973-1975 and editor of the *Australian Journal of Statistics* from 1978-1983. He was awarded an honorary life membership in 1981, and awarded the Pitman medal, named in honour of his mentor and teacher, in 1993. His contribution to Statistics has been considerable. There are few who have had such a long and distinguished association with Statistics in Australia, at all levels — in research, teaching, administration and in work for the Statistical Society.

## References

- Laslett, GM, Lloyd, CJ & Robinson, GK. (1994). Encounters with statistical inference — an interview with Evan Williams. *Austral. J. Statist.* **36**, 133-152.
- Pitman, EJG. (1983). Professor E.J. Williams. *Austral. J. Statist.* **25**, 169-173. ■



## Geoff Laslett

### Obituary



### INTRODUCTION

Sadly, Geoff Laslett, a renowned scientist and statistician, passed away peacefully on January 9th 2010. He had suffered from cancer for several years. He made significant contributions to research in several different disciplines as well as to statistical research and to the Statistical Society of Australia. He was an outstanding collaborator, colleague and friend.

Geoff was an undergraduate at University of Adelaide, where he graduated with first class honours in Applied Mathematics. He went to the ANU and moved to statistics, completing, under Daryl Daley, a PhD with the title "Some problems concerning cluster processes and other point processes."

He joined CSIRO in Adelaide in June, 1975, to work on multivariate analysis. He spent 9 months there and 12 months in Hobart "to be responsible for all consulting at the Tasmanian Regional Laboratory", before transferring to Melbourne in mid-1977.

By 1979 Geoff had developed firm views about the necessary conditions for a research project to be suitable for a successful statistical contribution. He had also developed a reputation as a valuable collaborator and consultant. Not all who sought his involvement in their projects met his necessary conditions!

Geoff became heavily involved in several significant industrial projects. One of these involved the modelling of the processes associated with spontaneous fission of uranium atoms in apatite crystals, with researchers at the University of Melbourne. Geoff's work on this project rapidly led to research publications, collaborations and friendships that would last for nearly 30 years. Together they began the science of geothermochronology which, in turn, led to the creation of the company Geotrack International and savings for the petroleum exploration industry of tens of millions of dollars. His most influential paper in this area (Laslett et al, 1987) has been cited 477 times.

Geoff's key statistical collaborator on the fission track modelling was Rex Galbraith from University College, London. They became involved with developing statistical methodology to underpin, as a valid scientific method, the use of optical luminescence for dating samples. This led to papers in Nature and Science addressing questions such as when the indigenous nations arrived in Australia and when local megafauna became extinct.

Geoff looked deeply at spatial prediction problems and in an important paper (Laslett, 1994) he wrote that he was turning the debate "to where it ultimately matters – namely the precision of prediction based on real data." This is Geoff the scientist speaking for assessment of predictors using the sorts of data that occur in practice.

From the late 90's Geoff became more involved with environmental problems (especially fisheries), notably improved estimation of Southern Bluefin Tuna population numbers and growth.

Partly because of health concerns, Geoff retired in July 2007 and took up an honorary fellowship with CSIRO.

For most of Geoff's career he was an active member of SSAI and he received a Service Award – see the SSAI Newsletter for December 2009, p20 <http://www.statsoc.org.au/objectlibrary/530?filename=129%20Dec%20Newsletter.pdf> for an extended description of Geoff's many contributions as editor, councillor as Branch President.

Geoff authored 75 scientific papers. They have been cited more than 2500 times. He has published in Nature, Science and the Proceedings of the Royal Society of London, as well as international statistics journals such as Biometrika, Journal of the American Statistical Association and Biometrics.

While Geoff proudly called himself a statistician, his approach was always to examine the scientific questions and undertake the statistical modelling and research which was necessary to address

the science. It was never statistical research for its own sake.

Geoff was a meticulous researcher checking everything from the initial data to the clarity of the final report. He was well read and a student of great scientists. He read Florey's biography and he was entranced by the integration of deep science and the pragmatics of achieving the scale-up in production needed to have a real impact.

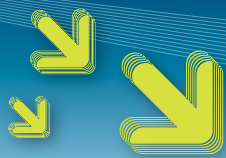
Geoff set himself very high standards and his collaborators had to approach those standards if they were to be on-going collaborators. It is not surprising that he had strong relationships with his collaborators who were usually like-minded. Collaborators valued Geoff and speak of his kindness, modesty, and broad intelligence (as well as the mathematical and statistical insight – and the enjoyable dinners!)

Of course these qualities, together with his kindness, acute sense of humour and interest in people resulted in him having a range of long standing close friendships. He will be greatly missed by his friends and his family, most notably his wife Kay Lipson and her daughters.

Geoff is a model of the influence that can be achieved by a person of integrity, commitment, humility, great intellect and with a wry smile.

### References

- G.M. Laslett, P.F. Green, I.R. Duddy & A.J.W. Gleadow. Thermal annealing of fission tracks in apatite: II. A quantitative analysis. *Isotope Geoscience* 65 (1987) 1-13.
- G.M. Laslett. Kriging and splines: an empirical comparison of their predictive performance in some applications. *Journal of the American Statistical Association* 89 (1994) 391-400. ■



ISOSS Conference  
Shahjahan Khan

## ISOSS Conference in Cairo Reinforces Statistics for Development and Good Governance



A section of the participants in the photo session of ICCS-X.

**The 10th Islamic Countries Conference on Statistical Sciences (ICCS-X) was successfully held in at the American University in Cairo (AUC), New Cairo, Egypt with over 300 participants from all over the world. The biennial conference was jointly organized by the Islamic Countries Society of Statistical Sciences (ISOSS), Egyptian Cabinet Information and Decision Support Centre (IDSC), and the AUC. The conference was financially sponsored by The main financial sponsor of the conference was the Islamic Development Bank (IDB), (Jeddah, Saudi Arabia), the Egyptian Ministries of Tourism and Investments, IDSSDC, and AUC. The conference was dedicated to the late Professor Mir Maswood Ali, a prominent Statistician of Bangladeshi origin and key founder of the Department of Statistical and Actuarial Sciences, University of Western Ontario, Canada.**

In the opening session, the Provost of the AUC, Dr Lisa Anderson, Provost of AUC, spoke on about the importance and diverse applications of Statistics Statistics from the ancient need of the States to the modern day public affairs. The ISOSS President, Dr Shahjahan Khan of the University of Southern Queensland, Australia, emphasized on the essence of engagements between the Sstatisticians from the developed coun tries with those in the developing countries [, especially with those of the IOC member states]

for improving the quality of Government government Statistics statistics and Statistical statistical research, as well as enhance enhancing its state of the art applications. Dr Maged Osman, Chair of the Local Organizing Committee and Head of IDSC, spoke on about the role of Statistics Statistics for development and good governance. Dr Ali S Hadi, Vice Provost of AUC, current Chief Editor of *ISI Review*, and Chair of the Scientific and

Programs Committee, and the Chief Editor of the *ISI Review* welcomed the participants, and covered different scientific and cultural activities of the conference.

The highlights of the conference include the participation of four keynote speakers. First, Dr Jef L Teugels, the President of the International Statistical Institute (ISI) (ISI), Netherlands. .Jef Tuegels presented a keynote address on the extreme value distributions with applications. He analyzed data of natural calamities/disasters with extremes coming from the 1970 cyclone in Bangladesh and Hurricane the Katrina in the southern USA. In his keynote address Dr Jim Berger covered the Bayesian adjustments of multiplicity in the testing regime of huge number of tests coming from multidisciplinary scientific studies. 5Dr Edward Wegman, who testified in the USA Congress twice on the scientific aspects of climate change issues, discussed the rapid changes in the data science, and took the audience to outer universe of huge datasets and the associated challenges to analyze them for scientific applications. A former President of the Statistical Society of Australia, Dr Kaye



Sitting (from left): Edward Wegman (USA), Jef Tuegel (ISI President, Belgium), Mohammad Hanif Mian (ISOSS VicePresident, Pakistan), Jim Berger (USA), Shahjahan Khan (ISOSS President, Australia). Standing (from left): Sharif A Abdelhalim (IDB, Saudi Arabia), Rasheed AlSuwaidi (DG, NBS, UAE), Rashid Salaria (Pakistan), Maged Osman (Chair, LOC, Egypt), Zeinab Amin (Co-Chair, LOC, Egypt), Ali Hadi (ISOSS President-Elect, Egypt/USA), Motiur Rahman (Bangladesh), Wafik Younan (Treasurer, LOC, Egypt), and Ishaq Bhatti (Australia).

Continued on page 13 >>



Standing (from left): Kaye Bashford (Australia), Sharif A Abdelhalim (IIB, Saudi Arabia), Magued Oslam (Chair, LOC, Egypt), Jef Tuegel (ISI President, Belgium), Zeinab Amin (Co-Chair, LOC, Egypt), Mohammad Hanif Mian (ISOSS Vice-President, Pakistan), Edward Wegman (USA), Jim Berger (USA). Sitting (from left): Shahjahan Khan (ISOSS President, Australia), Wafik Younan (Treasurer, LOC, Egypt), Ali S Hadi (ISOSS President-Elect, USA/Egypt).

Bashford, former President of the Statistical Society of Australia Inc, presented her keynote address on some applications of multivariate data analysis for determining the best quality of wheat production. The data presented in the talk were from an international team of experts working on the project around the world.

The theme of the conference was Statistics for Development and Good Governance. The following series of panel discussions related to this theme were presented.

Panel I: Public Opinion Polling & Good Governance (Speaker: Magued Osman, Moderator: Dina El Khawaja, and Discussants: Jennifer Bremer and Hafez Al Mirazil), Panel II: Measuring the Unmeasurable (Speaker: Anis Yusoff, Moderator: Mostafa Kamel El Sayed, and Discussants: Nadia Makary, Ghada Moussa, and Andrew Stone), and Panel III: Indicators & Politics, The Ibrahim Index for African Governance (Speaker: Ali S. Hadi, Moderator: Lisa Anderson, and Discussants: Lisa Anderson, Stephen Everhart, and Nabil Fahmy).

Another salient feature of the conference was the presentation of invited sessions on topics such as Statistics education, Demography and aging, Small area sampling, Medical meta-analysis, Statistical inference, Astrostatistics, Directional data analysis, etc. These sessions attracted leading scholars and researchers of the areas and benefited the participants enormously. Young and new researchers found the sessions stimulating for their future research. More details on the Conference Program and other activities of

ISOSS can be found at the Website: <http://www.isoss.com.pk/>

The Nile Cruise Gala Dinner on the luxurious boat and the entertainment of the Egyptian performing young men were outstanding. Some participants of the conference and the accompanying family members of family also participated in the interesting dance and other performances. The trip to the pyramids in Giza was a once in a life time experience for many participants.

Popular items of purchase relating to the history of the invention of paper from the papyrus and the collection of essence from the lotus were popular items of purchase. Many went to the Egyptian Museum to see the mummies of the Pharaohs, including Ramses II, many considered by many to be the Pharaoh in the story of Moses. The rich and colorful history of the ancient Egypt includes the first ever census conducted by Moses to count the men of Egypt at the time.

The business session of the conference was held in the evening of 21 December at the Marry Cross Hall of AUC. The President of ISOSS chaired the session and reported the main activities and achievements of ISOSS during the last two years following the conference in Kuala Lumpur, Malaysia in December 2007. The participants noted that in recent years ISOSS has become more visible in the international community of professionals and various statistical bodies along with receiving global recognition. The session re-elected Dr Shahjahan Khan as the President of ISOSS for 2009-2011, and Dr Ali S Hadi as the President-Elect for 2011-2013. The session endorsed the call of Dr Munir Ahmed, founding President of ISOSS, for donation of funds to the on going ISOSS House Construction Project in

## ISOSS Conference Shahjahan Khan



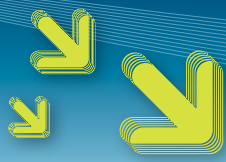
Standing (from left): Jef Tuegel (ISI President), Shahjahan Khan (ISOSS President, Australia), Magued Osman (Chair, LOC, Egypt), Mohammad Hanif Mian (Pakistan), Edward Wegman (USA), Jim Berger (USA), and Ali S Hadi (ISOSS President-Elect, USA/Egypt).

Lahore, Pakistan. A number of participants committed to contribute \$1000 and \$500 USD during the session.

Reported by **Shahjahan Khan**, President of ISOSS, Department of Mathematics & Computing, University of Southern Queensland, Australia. ■



A section of the participants in a scientific session of ICCS-X.



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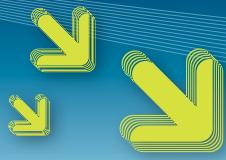
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Canberra  
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Rodriguez

## Knibbs Lecture Focuses on Mathematical Models for the Spread of Epidemics



Alan Welsh, Joe Gani and Daryl Daley.

**As it is tradition in the Canberra branch we had the Knibbs lecture on the last Tuesday of November 2009. This time the presenter was Professor Joe Gani, from the Australian National University. The discussants were Daryl Daley and Alan Welsh. We took this opportunity to celebrate Joe's 85th birthday in advance, as it was on the 15 December.**

Joe talked to us about the history and the development of mathematical models for the spread of epidemics, a very appropriate topic for the Knibbs lecture, as Sir George Handley Knibbs (1858-1929) was a member of the committee revising the nomenclature of diseases.

Daniel Bernoulli proposed the first mathematical model for the spread of smallpox in a paper to the French Royal Academy of Sciences in 1760. In the late 1800s Sir Ronald Ross, who won the Nobel Prize for medicine in 1902, put forward a model for malaria. This model was improved by Macdonald in 1957 and tested in the African savannah by Dietz, Molineaux and Thomas in 1974.

W. O. Kermack and A. G. McKendrick initiated the modern theory of epidemics in

three papers published in the proceedings of the Royal Society between 1927 and 1933. M. S. Bartlett presented a stochastic version of that model at the Royal Statistical Society in London in 1949. Since then, mathematical models for measles, HIV, SARS and various other epidemics including swine flu have been developed.

Epidemic models have proved to be very useful to epidemiologists. For example, the World Health Organization relied on a vaccination model for the eradication of smallpox while governments use models for the effective immunization against whooping cough, polio and other childhood diseases.

After this very entertaining and interesting lecture, we all headed to Café Berocca for the branch's Christmas party. We were delighted with a banquet but best of all was the interesting conversation dressed with wine of course.

**Veronica Boero Rodriguez**  
President – SSAI (Canberra) ●

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## 2010 Young Statisticians Network



Frank Liu.

**Hi everyone! I am the new Young Statisticians Network (YSN) Chair, taking this position from my predecessor Kevin Wang. I have completed a First Class Honours in Finance recently with another Bachelor degree in Actuarial Studies in the Australian National University. This is my first year in my PhD in Finance.**

Last year, the YSN organised an extremely successful YS Conference in Sydney under the leadership of Kevin. This year, we are looking to have a YS session at ASC

2010 in Freemantle. Over the next few months I will be working with the local organising committee and the state YS reps on this session, as well as local YS events throughout the year. If you have any suggestions, I encourage you to let your state YS rep or myself know. I can be contacted at [frankliu86903@gmail.com](mailto:frankliu86903@gmail.com).

**Frank Liu** ●



# New South Wales Branch News

New South Wales

Eric Beh



Participants at the 2009 JB Douglas Postgraduate Awards: (L to R) Wai-Yin Wan, Kevin McGeechan, Robert Wells, Julian Inchauspe, Benjamin Dean and Eva Knight.

Another year has gone and the NSW Branch concluded its 2009 activities with the annual JB Douglas Postgraduate Awards Day. It was the 10th anniversary of the postgraduate awards and was held at the University of Technology Sydney (UTS). We had six postgraduate students battling it out against each other for statistical fame and glory; their talks being judged on scientific quality, quality of presentation and time management. Kevin McGeechan (School of Public Health, University of Sydney) was awarded the top prize of \$1000 for his talk titled "Retinal vessel calibre and risk for coronary heart disease: an individual participant meta-analysis". Benjamin Dean (School of Mathematical and Physical Sciences, University of Newcastle) and Robert Wells (School of Economics and Finance, University of Western Sydney) were each awarded \$500 in prize money. Congratulations to these students on their excellent presentations. I also thank Julian Inchauspe (Macquarie University), Eva Knight (University of Sydney) and Wai-Yin Wan (University of Sydney) for their excellent talks and helping to show that the Awards day attracts some of the best young statistical minds in the country.

The presentations were judged by Doug Shaw, Tania Prvan and Richard Gerlach (who had to fill in for me at the last minute due to family reasons), so I would like to take this opportunity to thank them for their



Eric Sowe giving the Guest Lecture.

contribution. The guest lecture was given by Eric Sowe who talked about "Academic statisticians in an age of forgetting", an issue I know some of us are starting to (or have) become aware of. We are also very grateful for the generous help and support from the following sponsors without whom we would not be able to host such a high profile and successful event:

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- School of Mathematics and Statistics, University of Sydney,
- School of Mathematics and Statistics, University of New South Wales,
- Centre for the Study of Choice, University of Technology Sydney,


- Department of Mathematics Sciences, University of Technology Sydney,
- School of Economics and Finance, University of Western Sydney.
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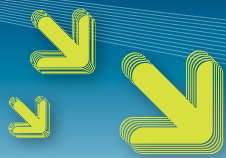
We look forward to your involvement in this year's Postgraduate Awards which will be held towards the end of November as usual.

The first major event for 2010 will be the AGM followed by the Lancaster Lecture. Details of the venue and date will have already been advertised to our members, but we are glad to confirm that this year's Lancaster Lecture will be given by Professor John Geweke from the Centre for the Study of Choice at UTS. John is an econometrician who holds fellowships with the Econometric Society (since 1982) and the American Statistical Association (since 1990). Before moving to UTS in the middle of 2009, he was the Harlan McGregor Chair in Economic Theory and Professor of Economics and Statistics, University of Iowa.

Following the AGM, this year's branch council will see a few changes. Richard Gerlach will be Branch President while I will now be the outgoing Vice President. Boris Choy has agreed to continue on as secretary, but Jennifer Chan has decided to step down as Treasurer. Stephen Bush will now take on the position having been the YS representative over the last few years. Filling this gap will be Leo Chow from Macquarie University. After being on branch council for two years Ayse Bilgin will be leaving. I would like to thank Jennifer for time as treasurer and Ayse for her contributions over the years. The time and effort you both have put in to serving the branch and the society are very much appreciated. Also stepping down after years of service are Brian Coote and Roger Robertson who have been our Branch auditors. We thank you both for your help with the books.

Eric Beh

President – SSAI (NSW) 



South Australia

David Hirst

## November Meeting: Suicide Attacks in Afghanistan and Pakistan

**The South Australian branch ended 2009 with a slightly unusual meeting in November. The speaker at the meeting was Nicholas Wilkey, a PhD student from the School of Politics at the University of Adelaide. The format of his talk was a presentation on his thesis about the motivation for suicide attacks in Afghanistan and Pakistan, followed by an open discussion with the audience on how he could analyse the data that was available on this topic.**

In the first part of his talk, Nicholas presented a brief history of suicide attacks and the recent conflicts in Afghanistan and Pakistan. The main focus in both countries is on fighting the Taliban and al-Qaeda, although the aims of these groups are different in each country. In Afghanistan, their motives are to overthrow the government and get rid of the US army, while in Pakistan they are just trying to establish their own territory and keep the government out of it. The situation in Pakistan is also complicated by the presence of several other local terrorist groups, and the country's opposition to India.

Nicholas also showed some data from the US State Department's Incident Track System on the number of suicide attacks that have taken place since 2004. Such has been the increase in attacks during this period, that there have been more attacks recorded in Afghanistan alone since 2004 (367) than there were in the entire world from 1980 to 2003 (315). There have not been as many attacks in Pakistan (139), but the frequency of the attacks there only started to increase over a year later than in Afghanistan. In comparison, the situation has been much worse in Iraq, where there have been 1253 attacks since 2004.

As part of his research, Nicholas has been considering the strategic benefits of suicide attacks to the organisations that carry them out. It is generally believed that the main strategic reason for an

organisation to use suicide attacks is to send a signal to both the supporters and opponents of that organisation. These signals include communicating the organisation's capabilities and intentions to hurt their opponents, and sending a warning message to intimidate the general population and anyone who may be helping their opponents. However, these strategies are only effective if the organisation claims responsibility for the attacks. Although these strategies seem to be relevant to the conflicts in Afghanistan and Pakistan, very little research has been carried out previously to test whether suicide attacks are being used for these purposes. This is because most of the data that is available on suicide attacks only measures the outcomes of the attack rather than the intentions of their perpetrators.

While Nicholas had come up with a number of potential hypotheses, the only tests that he had performed so far relate to whether it is possible to predict if an attack will be claimed, based on the target of the attack or the country in which it took place. His analysis involved using SPSS to perform a  $\chi^2$  test for independence on a series of 2x2 frequency tables between the variables claim type (claimed or unclaimed), target (military or civilian) and country (Pakistan or Afghanistan). A separate test of claim type against target was conducted for each country, but the analysis found that there was no significant relationship between these two variables in either country. However, there was a significant relationship between target and country ( $\chi^2=6.99$ ) and between claim type and country ( $\chi^2=28.5$ ), although Nicholas could not guarantee that these results were accurate. The data indicated that attacks in Afghanistan were more likely to be claimed, and more likely to be against a military target, than the attacks in Pakistan.

At this point, Nicholas concluded his presentation, and the meeting was then opened to the audience for their opinion. The few statisticians who were present

confirmed that the analysis Nicholas had already performed was appropriate, and suggested a couple of other methods that Nicholas could use to analyse his data. The main suggestion was to use a logistic regression model, for instance to look for factors that affect the probability of an attack being claimed. Another possible option would be to use a time series analysis to examine how the variables have changed over time. However, no one could provide much advice on how to do any of this in practice, without more information on the format of the data available.

If there is anyone reading this who is interested in assisting Nicholas with the statistical aspects of his project, or who has any other ideas about how to analyse his data, then please contact him at [nicholas.wilkey@adelaide.edu.au](mailto:nicholas.wilkey@adelaide.edu.au).

David Hirst ●

## Victorian Branch News

Victoria  
Scott Foster



*Dr Glenn De'ath.*


**The SSAI Victorian Branch Council is having its first committee meeting for the year on 25 February. The first meeting of members will be the Annual General Meeting, which is to be held on Tuesday 23 March, in conjunction with our first seminar for the year. Our report of the October Belz lecture ("Filling in the missing values: multiple imputation and the magic of applied statistics", by Professor John Carlin) appears on page 1 of this newsletter.**

### NEWS FROM HOBART!

On 26 November the Victorian Branch hosted a seminar at the CSIRO Marine Laboratories, Hobart. The speaker was Dr Glenn De'ath from the Australian Institute of Marine Science, Townsville.

Glenn gave an enlightening and persuasive presentation on the merits of tree-based models (title: "Boosted Trees: From Theory to Practice"). For me the highlight of the talk was the balanced objectivity that Glenn gave the subject. He not only described the attractive features of the methods, but also gave some quite detailed accounts for the reasons that the methods work and how they work. This kind of explanation was extremely useful and needed for those that are naturally distrustful of 'black-box' methods – a term that does not necessarily apply.

At the end of the talk we were all chatting about boosting, bagging, bagging the boost and boosting the bag. This discussion (amongst others of course) carried on well into the evening at a nearby tapas bar. If you have never tried it I must encourage you to try paella with statistics sometime – it was a refreshing and unusual taste!

Reported by: **Scott Foster** 


## NatStats 2010 Conference

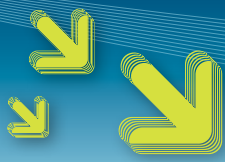
15-17 September 2010 Darling Harbour Sydney



The Australian Bureau of Statistics will be hosting another [NatStats](#) conference at the Sydney Convention and Exhibition Centre, Darling Harbour on 15 - 17 September 2010.

NatStats 2010 will build on the enthusiasm and passion generated by delegates at [NatStats08](#) and aims to build stronger links with key stakeholders, strengthen the understanding of statistical issues within and across governments, and consolidate support for current and emerging statistical initiatives.

An exciting program is being developed and will address a range of issues regarding national statistics. If you would like to hear more about NatStats 2010 Conference, or have any suggestions, please contact Annette Hants on (02) 6252 6936 or email [natstats@nss.gov.au](mailto:natstats@nss.gov.au). 



**Queensland**  
Miranda Mortlock

## Queensland Branch News

### JANUARY

A highlight in January was the awarding to Professor Annette Dobson, Director of the Lifespan Health Unit at the School of Population Health, the Australia Day honour of a Member of the Order of Australia for her years of service as a researcher and academic.

Annette is a national and international expert on public health and biostatistics and her work on the

collection and analysis of data relating to cardiovascular disease and women's and veterans' health was particularly recognised. Annette conducts research on statistical modelling and aspects of the application of statistics to issues in population health. The Queensland branch wishes to extend their congratulations and I wish her many future successes.

**Miranda Mortlock**  
President – SSAI (Queensland) ●



*The Bayesian debaters (Prof Kerrie Mengersen and Prof Tony Pettitt, listening to Adrian Barnett a recovering Bayesian).*

### NOVEMBER

On 24 November, we held a great debate in the Owen J Wordsworth Room of QUT with a fine view over the Brisbane River. The finger food and complimentary drink were provided by the branch for all members as a Christmas treat. The room was full and the debate proved very entertaining.

The great debate: Frequentists vs. Bayesians

Our adjudicator, referee Robert Reeves introduced two dynamic teams in the

#### **Frequentist Corner**

Roundhouse Rodney Wolff  
Adrian Boom Boom Barnett

and in the

#### **Bayesian Corner**

Tony the Tornado Pettitt  
Kerrie Lean Machine Mengersen

and the heat was on. The audience was in stitches as the debate stance ranged from the 'alcoholics anonymous' take on being a Bayesian by Adrian to the more traditional approach taken by the QUT professors. And Rodney Wolff stunned us with fantastic quotes and pictures annotated with devil's horns!

The Bayesian debaters (Prof Kerrie Mengersen and Prof Tony Pettitt, listening to Adrian Barnett a recovering Bayesian)

### DECEMBER

The Queensland branch had a break for the summer.

## Thinking Statistically

### *Elephants Go to School*

#### A UNIQUE TEXTBOOK

By

**Sarjinder Singh**

#### Reviews:

Collins Carbno, *Technometrics*,  
2007, 49(4), 496.

Marcin Kozak, *Statistics in  
Transition*, 2006, 7(6), 1407-9.

**Forewords by**

**David Robinson**

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**Stephen Horn**

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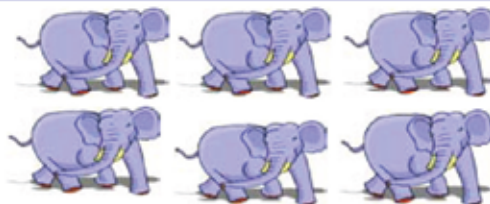
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# Keep in touch with SSAI through our website

Back Page




The screenshot shows the SSAI website homepage. At the top left is the SSAI logo and the text 'Statistical Society of Australia Inc.'. To the right is a 'MEMBER LOGIN AREA' with fields for 'Username' and 'Password', and buttons for 'LOGIN' and 'RECOVER PASSWORD'. Below the login area is a navigation menu with links: HOME, ABOUT US, MEMBERSHIP, BRANCHES, EVENTS (highlighted), PROFESSIONAL ACCREDITATION, YOUNG STATISTICIANS, PUBLICATIONS, RESOURCES, and CONTACT US. A search bar and a 'DOWNLOAD CURRENT NEWSLETTER' button are also present. The main content area features a welcome message, a 'UPCOMING EVENTS' section with a table of events, and three columns for 'MEMBERSHIP BENEFITS', 'YOUNG STATISTICIANS', and 'ARE YOU ACCREDITED?'. Each column includes a brief description, a list of benefits, and a 'SIGN UP' or 'BECOME ACCREDITED' button. At the bottom, there is a footer with navigation links and copyright information.

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The Statistical Society of Australia, Inc., represents Australian and overseas statisticians, providing an umbrella organisation for Branches in six States and Territories. The objective of the Society is to further the study, application and good practice of statistical theory and methods in all branches of learning and enterprise.

**UPCOMING EVENTS** [VIEW ALL EVENTS](#)

EVENT:	SUMMARY:	WHEN:	WHERE:	
Australian Statistical Conference 2008	Some brief details about this event to provide some insight	30 June - 3 July 2008	Melbourne	<a href="#">MORE INFO</a>
Australian Statistical Conference 2008	Some brief details about this event to provide some insight	30 June - 3 July 2008	Melbourne	<a href="#">MORE INFO</a>
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Present nisl. Maecenas lacina enim vel nulla. Integer accumsan.

- Nullam nisl libero
- Facilisis vel volutpat id
- Sed enim id erat
- Facilisis vel volutpat id

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**YOUNG STATISTICIANS**

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