statistical society of australia incorporated

SSAI newsletter

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IBC/ASC 2004

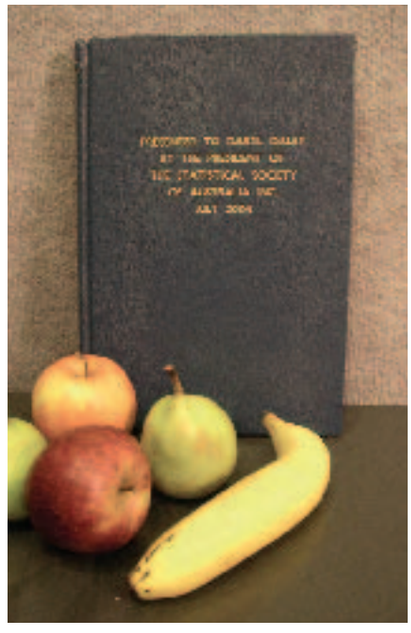
ASC 2004 was held in parallel with IBC 2004 in Cairns from 11th to 16th July 2004. The venue is ranked amongst the top 10 conference facilities in the world and everyone quickly adapted to the wonderful facilities in a convenient part of town. It did not seem like there were 762 registrants as things all happened with a minimum of fuss. Having the two conferences in parallel proved to be completely seamless and both societies learned from the experience. The IBS is keen to hold future conferences in conjunction with other societies because of the excellent work that Kaye Basford and others did to put on an excellent conference. The program provided a wide variety of topics as evidenced by comments from some of the session organisers:

This session was organised to recognise the contributions of Daryl Daley to the advancement of probability and statistics in Australia over many years.

The session started with a presentation by Neville Bartlett to Daryl of a bound copy of the Festschrift, which appeared as the March 2004 issue of the Australian and New Zealand Journal of Statistics. This was followed up by three talks on papers that appeared in the Festschrift. The first talk, by Chris Heyde, discussed the interesting asymptotic behaviour of a Bernoulli process whose success probability at the nth trial is a convex combination of a parameter p and the proportion of successes in the previous n-1 trials. The second talk consisted of a joint presentation by Robin Milne and Frank Ball on the application of simple point process methods to the analysis of superpositions of aggregated stationary processes. Finally, in the third talk, David Vere-Jones discussed a theorem involving rescaled marked point processes that appeared to have a simple proof, but in the end did not.

Peter Taylor

Daley "Festschrift presentation"



Daley "Festschrift with fruit"

In this issue

ASC 2004

Doug Shaw, Neville Bartlett and Jane Waslin at the SSAI Booth

For the first of my invited sessions, the highlights were (i) having world-known experts, Professors Kim Anh Do and Peter Mueller from MD Anderson Cancer Centre, talking here in Australia, (ii) hearing them give great talks about topical, difficult issues, using presentation aids well (and keeping to time!), and (iii) having an Australian (Kim Anh Do) who is involved in excellent research overseas come back to talk to us about what she is doing.

The second of my invited sessions comprised young researchers Dr Richard Gerlach from University of Newcastle and Dr Petra Kuhnert from Queensland Environmental and Dr Sama Low Choy from Queensland University of Technology. The highlights of this session were (i) having these three young researchers from academia and government talk so enthusiastically and lucidly about their work, and (ii) hearing about interesting, difficult applications that have been successfully addressed using (Bayesian) statistics.

Kerrie Mengersen

The session for young statisticians kicked off with three experienced statisticians who have had very different career paths talking about where their careers had taken them, highlighting some of the many opportunities that are available as a statistician. This was followed by a lively panel discussion, where members of the audience raised issues relevant to them as young statisticians and obtained responses from the four statisticians on the panel as well as other audience members. Perhaps the social highlight of the week for the young statisticians was the dinner for young statisticians held on Monday night. A fantastic turnout of around 60 people attended the dinner [partially supported by the SSAI Queensland Branch] and many friendships were created and built on throughout the remainder of the conference.

Anna Munday

Stephen Fienberg presented a case study of what was in effect very high level consulting – advising the US Congress on the viability of the polygraph (lie detector) as a device for screening employees of secure establishments. The issue is essentially statistical since it is one of balancing different errors – false positives and false negatives – associated with an imperfect device. When the proportion of true positives is very low as in screening, most positive results will be false. Stephen presented the statistical problem and, even more importantly, the communication problem – how to present the findings so that even politicians can understand it. A video of a Congressional hearing appeared to show that this was successful! Stephen's talk was followed by a discussion led by Murray Cameron and Neville Bartlett who added their own perspectives on communication of statistics.

John Henstridge

I thought the longitudinal session had two excellent and practical presentations from Peter Diggle and Patrick Heagerty. This was followed by a succinct and insightful discussion of the papers by John Carlin. It seemed to me to be the best attended session of the conference, showing that many statisticians have an interest in longitudinal methods.

Adrian Barnett

The conference organisation and venue was outstanding and equal to the best I have ever experienced. The range of content and the overall high quality of communication made for a stimulating week for myself.

On the data mining side, two highlights were:

1. *The complementarity of Lynne Billard's symbolic data work and Geoff Webb's "statistically sound" rules paper.*
2. *The nice connections made by Matt Wand between low rank splines and SVMs, along with John Maindonald's (among others) running critique of the whole monolithic predictive model "fad" versus addressing various components of variance.*

Rohan Baxter

EJ Pitman Prize

The EJ Pitman Prize is awarded for the most outstanding talk presented by a 'young statistician' at an Australian Statistical Conference. The prize is only open to members of the SSAI and a 'young statistician' means a person enrolled for a degree who is studying either full-time or part-time without age limit, or a person who graduated with a Bachelor's degree within the past five years, or a person awarded a postgraduate degree within the past year. The prize winner is selected by a committee of members of the Society appointed by Council.

The winner for 2004 was Scott Foster from Biometrics SA who presented 'The

ASC 2004

Central Council Members

LASSO Linear Mixed Model for QTL Detection'. Scott was presented with a cheque for $500 by Neville Bartlett, SSAI President.

Central Council Meeting

The Central Councils of the Statistical Society of Australia and the Australian Statistical Publishing Association Inc met in Cairns prior to the IBC/ASC2004.

From the President

The conference dinner at Tjapukai Cultural Centre provided an entertaining, informative and light hearted view of the world from a group of Indigenous Australians. Even the sceptics were impressed with the evening that must rate as one of the most enjoyable conference dinners that I have ever experienced. Time simply dissolved away under a tropical sky.

For the first time SSAI had a booth manned by our Executive Officer, Jane Waslin. This proved to be quite a hit with several people signing up as members and many others taking the opportunity

to meet Jane and to enter the competition for an MP3 player (this was won by Teresa Dickinson of ABS who has donated the prize to charity).

Feedback from attendees was strongly positive (in general) and the organisers for ASC/NZSA 2006 in Auckland (David Scott and William Dunsmuir) have a lot of ideas of how things might be done even better. We should all look forward to that.

Neville Bartlett

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Editorial

The society's conference, held in Cairns last July in conjunction with the International Biometric Society, was a great success – there are several articles and lots of photos spread through this issue of the newsletter.

Did you visit the society's stand at the conference and meet Jane Waslin, our Executive Officer? Congratulations to Teresa Dickinson who won the MP3 player and is donating it to a charity for them to raffle.

Jane was delighted with the feedback she received from several members on the redesigned society website (www.statsoc.org.au). The website is now 'live'. It has information on the society, its activities, branches and sections, as well as links to other sites. It is also where you can find the society's strategic and operational plans (which we've decided not to have as an insert to this issue of the newsletter).

As displayed elsewhere, the society's office is moving. The phone number remains the same, but we have a new fax number, e-mail and PO Box.

Website of the month

The website of the month is the new, re-vamped SSAI website (www.statsoc.org.au). Check it out!

It has information on the society, its activities, branches and sections, the society's strategic and operational plans, as well as links to other sites.

If you have any comments on the website, please contact Jane (admin@statsoc.org.au).

SSAI's Canberra office has moved

On 16 August SSAI opened its new office in Canberra (within the offices of Covance in Canberra) at 45 Torrens Street, Braddon.

The new postal address is:

PO Box 111
Braddon ACT 2612

The telephone number remains the same: (02) 6249 8266

The **new** fax number is: (02) 6249 6558

The **new** email address for the Executive Officer is: admin@statsoc.org.au

Please update your records on how to contact SSAI.

President's Corner

Review of Statistics in Australian Universities

Central Council has agreed that SSAI should conduct a review of Statistics in Australian Universities. Further details about this can be found elsewhere in this Newsletter and on the SSAI web site. At the time of going to press we are in the process of setting up a steering group under the leadership of Tim Brown. This group will finalise the Terms of Reference and set up a suitable timetable with the review team.

ANZJS

NZSA and SSAI have both accepted the recommendation regarding changes to ANZJS. Full details of the recommendation were published with the May issue of the Newsletter and can be found on both societies' web sites. In essence, ANZJS will still be published in the existing hardcopy format but there will be two electronic versions: one will be a full HTML version with direct electronic links to abstracts/references and the other will be the hardcopy version in a pdf format as is currently the case. Over the coming months we will be working through the details of setting up the new electronic version so that quality is maintained and there is no disruption to the smooth publication of the Journal.

Central Council also agreed to support the production of two larger issues of ANZJS so that the current backlog of papers can be reduced. Discussions with NZSA are underway so that joint agreement is reached before proceeding.

IBC/ASC 2004

IBC/ASC 2004 in Cairns is now behind us and thanks go to the many people who contributed much time and effort to make this conference a success. Special mention needs to be made of those who served on the Local Organising Committee and those who organised sessions at ASC 2004. Thank you very much for helping to make the conference one to be proud of.

Pitman Medal

The Pitman Medal for 2004 has been awarded to Adrian Baddeley. Adrian has made an outstanding contribution to the discipline of statistics and is a very worthy winner. Congratulations Adrian. Photographs have been taken of Adrian's medal and these will be placed on SSAI web site so that we can all see what the medal looks like.

Adrian Baddeley being presented with the Pitman Medal for 2004.

Kaye Basford is presented with a Service Award for her outstanding service to the SSAI.

Service Awards

At ASC 2004 in Cairns, service awards were presented to Kaye Basford and Tony Swain. These two people have contributed much to the Society over many years and have set great examples for others to emulate. A call for nominations for further service awards will be made over the next few months. It is important to remember that such awards are not granted lightly and two aspects are taken into account. Firstly, the minimum requirements (as per the regulations) must be met and secondly, a general comparison is made with those who have already received such an award. It is the second aspect that needs to be considered carefully.

Tony Swain is presented with a Service Award for his outstanding service to the SSAI.

Structure of SSAI and its Branches

The Queensland Branch have been considering whether to have the branch incorporated under the appropriate state legislation but has raised the question of whether SSAI could become a single organisation rather than an umbrella over six separate state branches. A working group has been set up to consider what options/models exist already that could be configured to work for the Society and to generate a discussion paper on the subject. There is no thought of abolishing the role and activities of each Branch as these are crucial to the Society. Branch representatives constitute a majority of the membership of Central Council so Branches will always have a key role in the affairs of the Society. Centralised accounting would enable each Branch to have budget allocations that would operate in a similar fashion as currently but without the overheads of separate bank accounts, auditing and financial records. Savings would be available for the branches that are not currently registered for GST. We look forward to the discussion paper.

Honorary Life Membership

Honorary life membership of SSAI has been awarded to Helen MacGillivray. Helen has contributed much to the Society over many years in a variety of roles. Her dedicated and passionate advocacy of the profession has earned her great respect amongst her peers and others. As a past President who has been closely involved with the establishment of accreditation and several other major initiatives, Helen can always be relied upon as a sounding board and to provide constructive suggestions. The citation supporting Helen's honorary life membership is reproduced on page 19.

Neville Bartlett
Email: neville@nrbartlett.com.au

Letter to the Editor

Review of Statistics at Australian Universities

For the last two years, we have been working with others to find ways to increase the number of suitably qualified Statistics graduates entering the Australian workforce. The background to this is well-documented elsewhere (*e.g.* the front page of the SSAI's website, http://www.statsoc.org.au/).

We should like to place the following facts on public record so that it is clear how the suggestion for a review of Statistics education in Australian universities came about.

1. The Minister of Education, Science and Training, the Honorable Brendan Nelson, MP, had a meeting with us last year to discuss Statistics education, because a number of submissions had documented problems in the supply of statisticians for various employers. Minister Nelson asked us to develop responses to this situation and the Review proposal is such a response.
2. Following discussions with DEST officials, we prepared material, including draft *Terms of Reference* for the Review, for consideration by the SSAI Executive/Council at their February 2004 meetings, and revised it for final consideration at the July meeting of Council on the basis of feedback from many parties.
3. Any review process must start with a draft of the ideas behind the review so that there can be proper comment.
4. Council has now decided that the Review will occur and that a Committee chaired by Tim Brown will manage the process, including finalising the *Terms of Reference*, timetable etc.
5. It has always been the intention to allow sufficient time for interested parties to make a submission to the Review Team.
6. Neither of us will have any role in the work of the Review Team, nor was any such role envisaged at any time.
7. Neither of us has received or will receive any remuneration for our time spent on preparing for the Review or carrying it out; nor was any contemplated at any stage.

Nicholas Fisher & Dennis Trewin

ABS Statistical Scholarships awarded in Canberra

On Monday 24 May 2004, four actuarial students at the Australian National University (ANU) were awarded an Australian Bureau of Statistics (ABS) Statistical Scholarship.

These students were Jeffrey Lai, Krishna Nagarajan, Lynette Lin and Peter Baker.

The ceremony and accompanying lunch were hosted by the School of Finance and Applied Statistics (FAS) at the ANU. After an introduction by Professor Terry O'Neill (FAS), the awards were presented by Robert Clark (ABS).

Several ABS Statistical Scholarships are awarded each year by the ABS to students in their first or second year at selected universities who have excelled in statistical subjects.

These universities are the University of Adelaide, the University of Wollongong, the University of Queensland, and the ANU. Each scholarship is to the value of $4000, and is offered for a full year of study in statistics. Application forms for students who wish to apply for the next round can be obtained from the Careers Office or Faculty staff from the relevant universities or by contacting the ABS. The closing date for applications in 2004 is in September.

The ABS places no restrictions of future employment on winners of the award.

Borek Puza

Young Statistician's Session and Dinner

Whilst the opportunity to attend the ASC as a Young Statistician is great, it can also be rather daunting and overwhelming, being surrounded by eminent statisticians and not many familiar faces. The Young Statistician's session held on the Monday afternoon of the conference aimed to overcome some of this as well as encouraging and helping young statisticians with their study and early stages of their career.

Three experienced statisticians kicked off the session by discussing their very different career paths and demonstrating just some of the many opportunities that exist for statisticians in their chosen career. We heard about opportunities for post-graduate study (PhDs and post-docs) and sabbaticals, working in industry, academia and consulting. The main thing we learned from the talks is that within statistics there are many interesting and exciting careers and that many career changes within the field of statistics are possible! It also became evident that very few people who become statisticians started out with that ambition when beginning uni, but that they happen to "fall into it" through enjoying the subject and the possibilities it offers. Many thanks to Kaye Basford, Ian Gordon and John Henstridge for their words of encouragement and for giving us a personal insight into their journeys as statisticians.

The second half of the session was interactive with the young statisticians having the chance to meet and greet each other, and also to meet some of the more experienced statisticians who attended the session. A panel of 4 statisticians (Robert Clark, Kerrie Mengersen, Peter Dunn and Peter Button) provided us with some interesting thoughts and perspectives by fielding questions from the audience about issues relevant to young statisticians. The topics covered included postgraduate study and the opportunities it can open up, ways that young statisticians can better integrate with experienced statisticians and the SSAI and their thoughts on the supply and demand for statisticians at present and in the future.

All in all, the session provided a great opportunity for Young Statisticians to feel more at home early on in the conference and see many familiar faces around the place for the rest of the week. It also gave us great encouragement that we have indeed chosen a wonderful career with many exciting opportunities available to us.

* * *

On Monday 12 July 2004, after a wonderful first day of the IBS 2004 and SSAI 2004 combined conference, the Young Statisticians, sponsored by the Queensland branch of the Statistical Society, embarked on a Young Statistician's dinner at the Rattle & Hum on the Esplanade in Cairns. After a few initial seating difficulties the group of budding Young Statisticians sat down and began to mingle over drinks before their meal. There was a great turn-out, far more than expected based on numbers at previous events like this, and even without a number of the Queensland crew, there were about 55 Young Statisticians dining together and getting to know one another.

Well aware of the exaggerated scale implied by the song and yet unwilling to tear away from the tradition of popular form, seven Young Statisticians ate and drank and otherwise devised alternate lyrics to "The Twelve Days of Christmas" that might more appropriately describe the events of the SSAI 2004 National Conference. The somewhat biased sample of Young Statisticians managed, much to their surprise, to pen a rough sketch of their "Twelve Days of Conference" in a single sitting even amidst the adverse effects,

Young Statisticians dinner

Young Statistician's Session and Dinner

or perhaps under the inspiration of, great quantities of that elixir of life we, in Queensland, lovingly call XXXX, the beer up here. Ok, so those of you who call another state your home, please note that we do not call our beer 'XXXX' in Queensland because we cannot spell 'beer', but rather because we do not want to waste our time spelling 'beer' when we could be drinking it!

Anyway, back to the tale at hand. After a rigorous analysis involving the counting of syllables and poor attempts at coercing the lyrics of the song from their feeble voice-boxes, the seven anonymous Young Statisticians present their song "The Twelve Days of Conference" for all the SSAI world to see.

The Twelve Days of Conference...

Young Statisticians Anon.

On the 1st day of conference my speaker gave to me
A talk on methodology.

On the 2nd day of conference my speaker gave to me
2 minutes left and a talk on methodology.

On the 3rd day of conference my speaker gave to me
3 day trips, 2 minutes left and a talk on methodology.

On the 4th day of conference my speaker gave to me
4 conference halls, 3 day trips, 2 minutes left and a talk on methodology.

On the 5th day of conference my speaker said to me
There are 5 data sets, 4 conference halls, 3 day trips, 2 minutes left, and a talk on methodology.

On the 6th day of conference my speaker gave to me
6 geeks a saying, 5 data sets, 4 conference halls, 3 day trips, 2 minutes left, and a talk on methodology.

On the 7th day of conference my speaker gave to me
7 sigmas summing, 6 geeks a saying, 5 data sets, 4 conference halls, 3 day trips,
2 minutes left, and a talk on methodology.

On the 8th day of conference my speaker gave to me
8 Bayesians BUGS-ing, 7 sigmas summing, 6 geeks a saying, 5 data sets,
4 conference halls, 3 day trips, 2 minutes left, and a talk on methodology.

On the 9th day of conference my speaker gave to me
9 ridge regressions, 8 Bayesians BUGS-ing, 7 sigmas summing, 6 geeks a saying
5 data sets, 4 conference halls, 3 day trips, 2 minutes left, and a talk on methodology.

On the 10th day of conference my speaker gave to me
10 listeners lasting, 9 ridge regressions, 8 Bayesians BUGS-ing, 7 sigmas summing,
6 geeks a saying, 5 data sets, 4 conference halls, 3 day trips, 2 minutes left, and a talk on methodology.

On the11th day of conference my speaker gave to me
11 Profs presenting, 10 listeners lasting, 9 ridge regressions, 8 Bayesians BUGS-ing,
7 sigmas summing, 6 geeks a saying, 5 data sets, 4 conference halls, 3 day trips,
2 minutes left, and a talk on methodology.

On the 12th day of conference my speaker gave to me
12 young stats singing, 11 Profs presenting, 10 listeners lasting, 9 ridge regressions
8 Bayesians BUGS-ing, 7 sigmas summing, 6 geeks a saying, 5 data sets,
4 conference halls, 3 day trips, 2 minutes left, and a talk on methodology.

Manchester ReUnited

The University of Manchester was particularly strong in Mathematics and Statistics in the 1950s and 60s. However, the university system was expanding and there were plenty of employment opportunities which could lead to the rapid departure of staff. When Peter Whittle left Manchester in 1967 to take up the Chair at Cambridge and David Silvey left to take up the Chair at Glasgow, most of the Statistics staff left too. The last man on deck was Richard Morton who was also considering an offer from another University. Just before close of business on the last day before he had to make his decision, Joe Gani phoned Richard from Sheffield to ask Richard to stay to link the Manchester Department with Joe's Department at the University of Sheffield to help build up the Manchester Department again. The plan was for the undergraduate programs to be kept separate but for the graduate programs to be run jointly. Chris Heyde was seconded from Sheffield to Manchester and spent a year there with Richard and the two of them laid the foundations for the Department to continue. Both David Vere-Jones and John Maindonald spent time at Manchester during this crucial period. All five of these illustrious antipodean statisticians were in Canberra for the Canberra Branch meeting to celebrate Chris Heyde's and Daryl Daley's 65th birthdays so it was a good opportunity to capture the reunion of the men who "reunited" Manchester.

David Vere-Jones, Richard Morton, Chris Heyde, John Maindonald, Joe Gani.

Accreditation Update

1. New AStats

Congratulations to the following who have been awarded AStat status in the past few months: Teresa Neeman, Robert Traficante, Idris Barchia, Kally Yuen, Robert Clark, Alan Brnabic and Adrian Baddeley.

2. Accreditation of courses

The Society has recently approved a process for the accreditation of Statistics degree programs at Australian universities that will allow graduates from the courses automatic accreditation as GStat on joining the Society.

The process involves a review by the Accreditation Committee of the content of the program to ensure that graduates meet the prescribed educational requirements. All Australian universities have been invited to apply for accreditation of their statistics or related programs. Details of the application process can be obtained from the Executive Officer or online at http://www.statsoc.org.au/info_uni.html. Please encourage your local universities to consider applying for accreditation of their Statistics programs.

3. Reaccreditation

The process of reaccreditation of AStats is now operating smoothly. Many AStats whose five-year accreditation period has expired have successfully applied for reaccreditation.

Reaccreditation reminders and forms are sent to AStats a few months before the expiry of their accreditation – but please don't wait for the reminder if your accreditation is due for renewal (the expiry date is shown on your Certificate). The form is available online at http://www.statsoc.org.au/info_stat.html.

The reaccreditation process is straightforward and simply asks for evidence of continuing involvement in the statistical profession.

The award of GStat is valid for up to 8 years from the awarding of the degree and so a number of GStats are now reaching the end of their terms. A notification and an invitation to apply for AStat is being sent to each GStat as their term expires: their qualifications have already met the educational requirements for AStat and so only details of practical experience are required. Of course, there is no requirement for a GStat to wait for the end of the term: six years' experience, or four for graduates with an honours degree, are sufficient to qualify for AStat.

4. Change of membership

Two members of the Accreditation Committee have recently completed their terms. Our thanks are due to Prof Matthew Knuiman and Prof Kaye Basford for their service to the Society. Dr John Henstridge and Prof Janet Chaseling have been appointed to the Committee by Central Council.

Ian Saunders, Chair,
Accreditation Committee

Recently awarded AStat members – Profiles

Yvonne Kan

I am pursuing a Master of Biostatistics degree at the University of Sydney and have completed a Bachelor of Science degree at Macquarie University where I am currently supervising practical classes for a first year statistics unit. I am interested in epidemiology, the health and chemical industries and surveys.

Alan Brnabic

In the past I have been involved in public and population health research including survey analysis and epidemiology. More recently I have been involved in phase II and IV clinical trial research predominantly in the area of neuroscience.

AStat members who have been reaccredited as AStat and provided updated information

Nicholas Fisher

Background: Research and consulting in statistical applications in the earth sciences, and in statistical graphics, mainly at CSIRO.

Recent: Research and consulting in performance measurement systems for enterprises.

Matthew Knuiman

Graduated with a PhD in Mathematical Statistics in 1983 from the University of Western Australia. His career has involved application and teaching of statistical methods in the medical/health sciences. His current research interests relate to chronic diseases epidemiology. He is also Biostatistician/Epidemiologist for the Busselton Health Study.

John Field

John has had over 35 years of experience as a statistical consultant, mainly with CSIRO. He set up his own consulting business in 2001, and consults mainly in the wine, electricity and education industries.

Kenneth RW Brewer

BA (Melb) 1960, majoring in statistics. MEc and PhD (ANU) 1973 and 1997. Thesis on statistical inference. 49 years continuous involvement in survey sampling, principally at ABS (19 years), ABARE (9 years) and ANU (17 years). Authored or co-authored 40 journal articles and two books. Experienced statistical survey consultant.

John Henstridge

After working with the University of Western Australia and Siromath, John Henstridge founded Data Analysis Australia in 1988 and has been its Managing Director since then. He has developed the company to the stage where it employs ten statisticians and has clients across Australia.

David M Smith

My background is medical research and associated education in the UK and USA; pharmaceutical company and associated consultancy group in the UK; and university teaching in Australia. Most of my research interests have grown out of consultancy work in medicine, toxicology and pharmacology. These include generalised linear models, optimal design in bioassay and statistical computing.

Review of Statistics at Australian Universities

Summary

The Statistical Society of Australia, Incorporated (SSAI) has decided to hold a review of statistics at Australian Universities. For some time, several employers of statisticians in Australia have been expressing concern about the supply of suitably qualified and experienced statisticians and these employers are interested in supporting constructive steps to improve the situation over the next few years. Over recent years, a wide variety of changes have occurred within Australian Universities and these changes have complex interactions with the supply of students into university courses at a time when there is increasing demand for people with statistical skills. A review is seen as a way of describing the realities of the current situation with some care and providing a solid foundation on which to develop ways to improve the future prospects for the profession in Australia.

Background

The origins of this review date back to meetings at the Canberra conference in July 2002 and in Sydney early in 2003. At that time the focus was on increasing the profile of statistics in schools and subsequent discussions between members of SSAI and the Department of Education, Science and Training (DEST) led to steps to develop a framework that would encourage individual states to develop curricula consistent with the overall framework. The Minister of Education (Hon. Brendan Nelson) suggested that Universities should be considered as well and this led to further discussion between DEST, ABS and some SSAI members. Discussion papers generated during this phase are available on the SSAI website and illustrate the types of ideas being bandied about. These papers are discussion papers and should be treated as such.

Further discussions led to the proposal to hold a review that was open to a very broad range of people. From the SSAI perspective this transformed discussions involving a small group of people into an open process that could gather information from a wide variety of sources, handle diversity of opinion and encourage the development of outcomes that are soundly based.

Why should SSAI be involved?

SSAI has become the organisation primarily responsible for the review because it is a professional body that represents all statisticians and does not have a vested interest in promoting particular outcomes. SSAI does have an interest in making sure that everyone gets an opportunity to participate in the review, to get a fair hearing and to discourage outcomes that disadvantage particular groups of members.

Development of the terms of reference

A first draft of the terms of reference appeared before the February SSAI Central Council meeting and attracted considerable debate about the concerns expressed by some members. As a result of this discussion a group of four was commissioned to re-write the brief so that the main concerns could be addressed. Had this not been possible then SSAI support for the proposal would most likely have halted. In fact the team did reach agreement on a new version (draft #2) of the terms of reference and it was also agreed that the size of the review team should be increased (from two to three).

This second draft was circulated to the SSAI Branches and received several responses. A third draft was consequently constructed in an effort to make things clearer but this step lost the support of some who were involved in the construction of draft #2. A copy of the third draft is available on the SSAI web site.

The final version of the terms of reference will be decided by a steering group that SSAI is setting up to manage the review. Tim Brown of ANU will chair this group and representatives of the various stakeholders are being appointed. The group will be asked to construct a workable terms of reference that is acceptable to all parties.

The review team

A team of reviewers has been approached to see if they were prepared to participate and to indicate whether they would be available in late July 2004 (the original time proposed at the start of 2004). The people suggested are Adrian Smith (Principal, Queen Mary, University of London), Professor David Vere-Jones (Victoria University of Wellington) and Professor Ian James (Murdoch University). There is no doubt that such a team have the necessary background, knowledge and experience to cover virtually all aspects of statistics that are likely to arise. Also, these people will provide the independent viewpoint that is crucial to such a review.

What is SSAI committed to doing?

The recent Central Council meeting in Cairns agreed that the review should proceed, that SSAI would contribute up to $5,000 from its reserves towards the cost and that a steering group would be set up to agree the final terms of reference, the composition of the review team, a timetable and tackle any other issues as the review progresses.

Will there be winners and losers as a result of the review?

This is not a zero-sum game where someone must lose. There are several reasons for this. Firstly, the employers that have been involved so far are prepared to contribute funds to well-constructed proposals and the department (DEST) has the potential to also supply extra funds, provided that the proposals are consistent with its broad objectives (involvement of employers, and collaboration between academic institutions). This should encourage constructive and creative thinking. Secondly, universities are major employers of statisticians for research and teaching and therefore should not be thought of as the 'targets' of the review. The universities are important along several dimensions and this review will provide an opportunity for this to be appropriately addressed. Notions that this is an attack on universities are neither true nor helpful. Thirdly, the employers with concerns have yet to articulate their case in such a way that the profession generally (and universities in particular) accept as being something more than complaints about an environment where demand is greater than supply.

Next steps

Well-founded criticism has centred on two aspects that have been addressed. Firstly, the start has been delayed by a few months so that we proceed with less haste. This will not suit everyone but it has provided more time for discussion and the preparation of submissions. Secondly, the degree of consultation needed to be improved. For a variety of reasons, some of the people who are

On Retiring from Monash University

I retired from Monash University in December 1996, three years before the normal due date. I had not meant to take early retirement - my research was going well, I was enjoying teaching, I was the director of the statistics section of the Mathematics Department, and I was having a wonderful social life in the Department. However, in the middle of 1995 the atmosphere at Monash, as at other Australian universities, was turning nasty; budget shortages, rumours of impending staff sackings, and closure of departments were rife. Members of the Mathematics department were pointing accusing fingers at each other over wastages, and for having appointed incompetent staff members in their section. So I decided to take the plunge. I didn't suffer any significant financial disadvantage in taking early retirement. My main regret was that I had, (borrowing a phrase from Churchill) presided over the liquidation of the statistics section. Just before my retirement, there were 16 full-time members, including tutors, at Monash's Clayton, Caulfield, and Frankston campuses. A year after, there were only five, and eight months later, only two! After 1996, the situation at Monash turned from bad to worse. Many of the old courses were cancelled, with new courses cobbled up from disparate areas. In 1996, there were 12 Statistics courses for third year students; in 2004 there are three! The workload increased markedly (see the article by my former colleague John Stillwell in the March 2004 issue of the Australian Mathematical Society Gazette). I was so glad that I had quit that I was able to declare to my colleagues that retiring early was the best decision I had made in my life (the second best when my wife was within earshot!).

I became an honorary member of the Mathematics Department. I kept on doing research, though at a reduced pace. There were two problems I was interested in. One was the flood frequency problem, and the other the computer file search problem. The main paper on the flood frequency problem was rejected by a couple of journals. I had badly wanted that work published, as it was a significant improvement on methods currently in use; however, the work suggested by the referee would have involved a massive amount of computation, and not being able to have a research assistant, I decided, after much soul searching, to make it my UNFINISHED PAPER! I wrote a couple of papers on the computer file search problem with Alan Pryde, and a review paper for a conference on Stochastic Processes and their applications held in Madras, in 1997. It is interesting that unlike in Australia where we would get only a handful of participants at Probability and Stochastic Processes sessions at Statistical Society conferences, at Madras there were around 150 delegates. For me the most memorable moment came when at a social function I met Lenin, Stalin, Hitler and Gandhi — all statisticians! Perhaps I should explain. The first two are not uncommon names, at least in south India. The Hitler I met was in his late fifties, his father an anti-British Indian Nationalist, when naming the son in 1942 obviously subscribed to the theory that your enemy's enemy is your friend! And, of course, Gandhi's are dime a dozen in India. To do further research on the computer search problem would have required me to make a quantum leap in my knowledge of matrix theory, and considering the speed with which advances in computer science are made, I wasn't prepared to invest a lot of time and effort. I have now switched to a problem in bank credit risk, initially as a consultation project, slowly turning into a research problem. For me one of the attractions of working on it is that it involves the gambler's ruin problem, one of my favourite topics in probability.

Since retirement I have also done some consulting work. The most important project was for Tabcorp, regarding the discount they give to their high flyers. There was also some work for Comalco, handsomely paid. One of the most enjoyable projects was for a firm dealing with applications of science and technology in industry. It was a problem about screening, of the type one encounters at airports. I solved it in a matter of hours, and as I had enjoyed doing the work, I wasn't too keen to charge for it. So I was paid in wine! No, not Grange! Half a dozen bottles of the level of Penfold's St. Henri!

In September 1997, Bob Griffiths departed for Oxford, and I was asked if I could finish his course in Stochastic Processes. I did it gladly, and since then have lectured on other subjects at Monash and at RMIT. In all, I have taught about a dozen courses.

I go to Monash on most days. I have just finished giving a course to engineers. I am grateful, especially to my former colleagues for their very generous welcome. In fact, I have come to know some of them, in applied mathematics, a lot better than when I was a staff member. We go to lunch to the faculty club, and occasionally to Chinese Yumchas. Geoff Watterson usually comes around once a week, when he is not watching cricket at the MCG. When the cricket season is on, he discusses with us the match he had been to recently; however, when he visits us during the football season he never discusses any match, out of respect for my feelings on the subject! For this I am eternally grateful.

Ravi Phatarfod
Monash University
Email Ravi.Phatarfod@sci.monash.edu.au

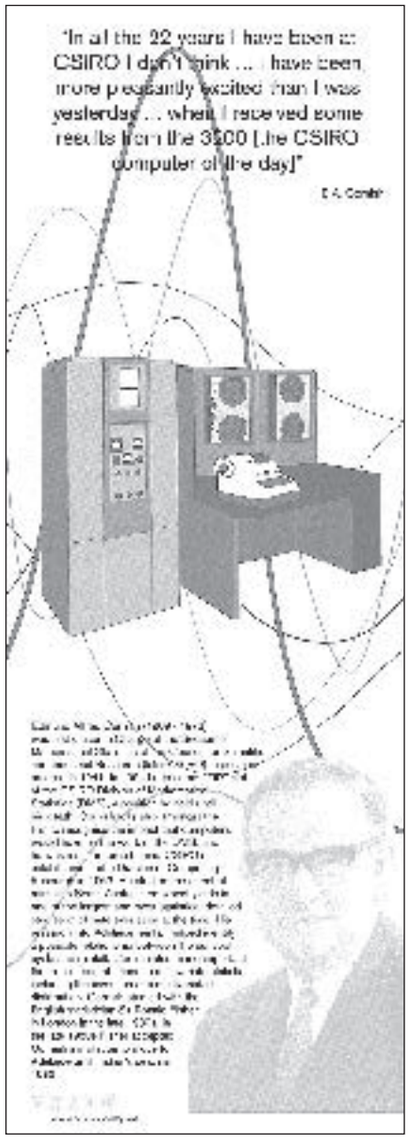
likely to participate have only recently become aware of the proposal and rightly feel annoyed about the original start date late in July. An open forum was held at the conference in Cairns that provided SSAI members with an opportunity to learn more about what was proposed, to ask questions and make suggestions.

The steering group will finalise the terms of reference and set up the timetable that will be followed. Steps are underway to discuss the review with other organisations.

Up to date information will be maintained on the SSAI website.

Members wanting to make comments, suggestions and criticisms can do so in a variety of ways either through Branch representatives, members of the Executive, directly to me or via someone else who can pass on your views. All material sent directly to me will be kept confidential as a matter of course.

Neville Bartlett
President
Email: neville@nrbartlett.com.au



Member News

Noel Cressie, professor of statistics and director of the program in Spatial Statistics and Environmental Sciences at The Ohio State University, was named Distinguished Professor of Mathematical and Physical Sciences at Ohio State as of May 1, 2004.

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Alice Richardson, one of the editors of the *SSAI Newsletter* welcomed Miranda Young into the world on 4 August.

Miranda with her sister Olivia and mother, Alice

Statistical education

Interested in eLearning, then this site (www.e-learning.fu-berlin.de) is for you. It gives an entry to an internet-based learning environment developed as an enhancement to the learning software Statistics interactive!, by CeDiS, the Centre for Digital Systems at the Free University Berlin, and already collecting international media awards. At its core is a statistical laboratory; the interactivity extends to animation in the graphs, simulations and case studies.

It is part of a larger (German) government sponsored 'new statistics' project, a collaboration of numerous academic partners from around the country. Its aim is to establish: "… a new, multimedia-based form of instruction in statistics in German universities". Not shy of radical goals "… the project attempts to transform? traditionally formal, mathematically dominated statistical instruction into a problem-solving, reality-oriented approach." Be that as it may, the curriculum remains unexceptional: descriptive statistics, probability, testing, surveys, estimation, regression. It is linked to an on-line version of official labour statistics, perhaps reflecting the recruitment interests of its sponsor.

Stephen Horn

CSIRO Sponsorship of Students to attend ASC2004

CSIRO Scholarship winners left to right: Maryann O'Donnell, University of Sydney, Jared O'Connell, University of Western Australia, and Lisa Yelland, University of Adelaide.

CSIRO Mathematical and Information Sciences provided three Statistical honours students with the opportunity to attend the Australian Statistical Conference 2004, held in Cairns.

Maryann O'Donnell is studying Agricultural Science at the University of Sydney and majoring in Biometry (the first honours student to do so in 5 years). Her research involves modelling germination curves, with a focus on the Inverse Gaussian distribution. Her project is titled "Statistical models for germination trials (To Seed, or Not to Seed – what is the equation?!)".

"At this stage, I'm keeping my options open for next year" she says. "The idea of further study appeals to me, maybe overseas, but I have not made any decisions at this stage. Whatever I do, I want to be working with an agricultural focus. The opportunity to chat with academics and professionals at the conference in Cairns was an invaluable experience and offered me great insight into the possibilities in the stats industry."

Jared O'Connell is interested in applying statistics in environmental sciences. His honours work involves developing methodology for fitting splines with change-points and his work will be applied to hydrological data.

"I'd like to remain in research," says Jared, "but in what capacity I am not sure. Postgraduate studies would be a definite possibility."

Lisa Yelland's main interests are applications of statistics to science and medicine. Her thesis is titled 'Non-Linear Mixed Effects Models: Estimating Intra-Subject Variability in the Pharmacokinetics of Ethanol'.

"This basically involves me using mixed effects models to model data from a controlled drinking experiment," she explains. "The point is to investigate within-subject variability in ethanol elimination rates. It is common practice for people who get caught drink driving to take part in a controlled drinking experiment to dispute the result of their breath test. Analysis of data produced in such an experiment is based on a number of assumptions, including that there is no within-subject variability in ethanol elimination rates. The research I am involved with may have implications for future legal cases involving disputes about breathalyser results."

ISI 2005
Sydney, Australia
5-12 April 2005
Registration is now open!

Registration is now open for the world's premier statistical conference – the 2005 International Statistical Institute (ISI) Session – scheduled for Sydney, Australia, 5-12 April 2005.

Professional statisticians, plus those who want to stay in touch with latest developments in the field, will find it of great interest and should register their interest now to ensure you are kept informed about the Session developments.

The Session will feature leading keynote speakers from around the world and more than 100 scientific sessions.

Preparations for the Invited Paper Meetings, which have been developed by the Program Committees of the ISI and its Sections, are making good progress. The full list of Invited Paper Meetings plus a tentative schedule is located on the Session website www.tourhosts.com.au/isi2005.

Three theme days are being arranged for the Session:

1. Environmental Statistics – will include 3 Invited Paper Meetings, a tutorial and related Contributed Papers
2. Statistics and Finance – will include 4 Invited Paper Meetings, a lunchtime address by the Deputy Governor of the Reserved Bank of Australia, plus related Contributed Papers
3. Genomics – will include 3 Invited Paper Meetings and related Contributed Papers

Two plenary meetings are also planned. The Presidents Invited Paper, at which Robert M May, FRS, Oxford University (and Chief Scientist of the UK), Willem van Swet, and Hermann Habermann will speak, and a talk by Nobel Laureate, Clive Granger.

A number of Contributed Papers have already been submitted for the Session. If you interested in attending the ISI Session and preparing a Contributed Paper see the ISI 2005 Website www.tourhosts.com.au/isi2005 for a list of topics and submission instructions. This list is only indicative and submissions on other statistical topics are also welcome. Paper submission closes on 6 December 2004.

The Chair of the National Organising Committee, Australian Statistician, Dennis Trewin, said the biennial session was a cost effective and enjoyable way to stay in touch with the latest statistical developments.

"The networking opportunities are excellent and the academic benefits are very rewarding," he said.

"The scientific program is wide ranging with 12 parallel sessions of invited and contributed papers apart from the occasional plenary session. There should be plenty of interest for everyone.

"The scientific program will be supplemented by tutorials and short courses. There will also be satellite meetings, before and after ISI 2005, at very interesting locations such as Cairns (Gateway to the Great Barrier Reef), Auckland and Wellington in New Zealand, and New Caledonia."

Dennis said that while the scientific program was of paramount importance, the social program was designed to provide a great opportunity to meet old and new colleagues.

A number of exciting social functions have been planned. "We will be holding an Australiana night which is included in the registration fee," he said. "There will also be a dinner cruise on Sydney Harbour. Also, if the schedules correspond, there will be an opportunity to attend an opera at Sydney Opera House."

The final registration form is now available on **www.tourhosts.com.au/isi2005**. To register please visit the Session website and complete the online registration form.

For more details on the 2005 ISI Session see **www.tourhosts.com.au/isi2005** or email the conference managers on **isi2005@tourhosts.com.au**.

Contact Details

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GPO Box 128
SYDNEY NSW 2001
Telephone: +61 02 9248 0800
Fax: +61 2 9248 0800
Email: isi2005@tourhosts.com.au
www.tourhosts.com.au/isi2005

NEWSFLASH

The official 2005 ISI Website has been updated.

For the latest information and online paper submission visit **www.tourhosts.com.au/isi2005**

Major Deadlines

6 December 2004	Authors of invited and contributed papers to submit final manuscripts
Before 31 January 2005	Early Registration Fee cut off
After 31 January 2005	Late Registration Fee applies
18 February 2005	Tour bookings to be finalised (including pre and post Session tours
4 March 2005	Social program and accommodation bookings to be finalised
4 March 2005	Speakers to email their presentations to the Conference Managers
4 April 2005	Registration for the Session commences
5 April 2005	Session opens
12 April 2005	Session closes

"Come to Sydney!" Stephen M. Stigler (left) President of the International Statistical Institute, and Daniel Berze, Director of the Institute, pictured during a site inspection in Sydney. The 55th Session of the ISI is scheduled for April 5-12 2005.

Left to right: Daniel Berze, Director of the ISI, Stephen M. Stigler, President of the ISI, Dennis Trewin, Australian Statistician and Chair of the ISI 2005 National Organising Committee and Nick Fisher, Vice Chair of the ISI 2005 National Organising Committee and SSAI representative at a recent Organising Committee Meeting which was held in Sydney.

SSAI's Canberra office has moved – The new postal address is: PO Box 111, Braddon ACT 2612
The telephone remains the same (02) 6249 8266 – Our new Fax (02) 6249 6558

Honorary Life Membership of SSAI awarded to Associate Professor Helen MacGillivray

Helen is an outstanding statistician who has made very significant contributions to the statistical profession and the SSAI. She has filled major roles in many professional and government bodies where she tirelessly advocates the importance of statistical practice and statistical education in our society.

She has filled management roles in the SSAI since 1985, rising to the level of president in 1995. Highlights of her achievements while on the Executive of the society include:

- Establishment of accreditation of professional statisticians including the writing of the accreditation model and inaugural rules and regulations
- Combining the journals of the Statistical Society of Australia and of the New Zealand Statistical Association into the ANZJS
- The negotiation and establishment of arrangements for the commercial publication of the journal with Blackwell
- Establishment of the Pitman prize for young statisticians
- Rewriting of the national constitutions to reflect changes in SSAI procedures; to meet the requirements of the revised ACT Incorporation ACT; and to provide closer links between branches and central council
- Establishment of the Young Statisticians' Section.

Recent times have been fairly difficult for mathematical educators and lobby groups such as FASTS have become very important in protecting the fragile position of the discipline. Helen has been a very important link between the SSAI and these groups. She has been a board member of FASTS and President of the Australian Mathematical Sciences Council. She authored the following influential submissions to government:

- Joint authorship of *Rebuilding the Enabling Science: Reclaiming the Key to Unlock the Nations Potential* a joint statement by the Australian Institute of Physics, Royal Australian Chemical Institute, IEAust, and the Australian Mathematical Sciences Council
- Presidential Submission to Australian Science Capability Review

Effective statistical education in Australia is crucial to the future health of statistics. Helen has made distinguished contributions to statistical education with

her own excellent teaching, involvement in senior secondary school teaching in Queensland, and international conferences on teaching. She has written many influential papers on the teaching of statistics.

Helen is currently Chair of the Senior Mathematics Committee of the Queensland Board of Secondary Studies. After giving many workshops on statistics to senior maths teachers during 1991–1995, Helen was brought into the Senior Maths Committee to revise the statistics components of the senior maths syllabi (3 subjects). As Chair, Helen's current priority is to expand the role of the QSA to provide supporting resources for teachers. Helen considers this step to be particularly important for the effective teaching of statistics in secondary schools.

Helen's teaching excellence has resulted in several awards for teaching, most notably being a finalist in the 2003 Australian Teaching Awards. Helen is one of only three statisticians to achieve this distinction. Recent highlights which demonstrate the widespread recognition of Helen's prowess, influence and breadth in teaching include:

- Her detailed work on the draft materials for the proposed UK/RSS course "Teaching Statistics in Higher Education" lead to significant improvements and helped gain its accreditation from RSS
- As consultant for the RSS Centre and the LTSN in MSOR, she visited and gave feedback on top UK statistics teaching departments; developed web-based teaching resources in applied statistics; helped re-develop the Glasgow-based website in statistics teaching and learning support for staff; and evaluated Java applets in statistics
- As director of the Maths Access Centre at QUT, she was successful in obtaining approval and funding to make the centre a university facility in expertise and support for mathematical and statistical literacy learning in tertiary studies
- After being asked for advice by the Qld Maths Project Officer on teachers' questions on statistics in the draft P-10 syllabus, she was brought in as consultant to re-write the draft syllabus on the Data strand.

Helen also has a strong reputation for her research publications. Throughout her career, she has maintained a steady stream of publications on the properties of distributions.

Obituaries

Ann Coultas 1942–2004

Originally from Hertfordshire, UK, Ann Coultas came to Australia in 1964. In 1977, she entered the Bachelor of Economics at Flinders University in South Australia. Despite her relatively late introduction to university study, she proved to be an outstanding student and graduated in Economics in 1983. During this time, she discovered her talent in mathematics and statistics and enrolled in a second degree, graduating with first class honours in Statistics in 1989. She was immediately appointed as a Tutor in Statistics at Flinders University, a position she held until 1996 when she moved to the Department of Statistics at the University of Adelaide, as an associate lecturer.

As a teacher, Ann was passionate and single minded. Her patience, kindness and unique sense of humour were greatly appreciated by countless students over the years. She influenced many students to continue their studies in Statistics. Ann was also a wonderful colleague, providing outstanding support and advice to other staff as well as a healthy dose of reality when needed. To many, she was a close friend as well as a valued colleague or teacher. Ann made a great many friends at both universities and will be fondly remembered and sadly missed.

Peter Wright

It is with great sadness that we have to report the sudden death of Dr Peter Wright on 23 May, 2004. Peter was a stalwart of the NSW Branch of the Society. He served continuously on the Branch Council for nine years, 1993 to 2001. During this time he was Branch Secretary (2001), Treasurer for four years and Branch Webmaster for four years. Peter set up the Branch's web pages in 1998. He made them the most comprehensive branch website at that time. He then arranged the transfer of the site to a public server where its existence would not be dependent on the support of a member's employer.

Peter was outstanding in keeping the Branch informed of its myriad statutory requirements, and was responsible for establishing the role of Legislative Affairs Coordinator within the Branch to deal with such issues as GST and incorporation.

Peter is remembered for the quality of his service to the Society and the profession. His broad overview of the Branch's activities and sardonic humour will be sorely missed.

Australasian Conferences

Thredbo Statistical Meeting
6 – 11 February 2005 — Thredbo Village, NSW. Australasian Region of the International Biometric Society and Australasian GenStat Users Association Inc.
http://www.maths.anu.edu.au/thredbo2005/

Fourth International Conference on Statistics in Business and Industry (ISBIS-4)
13 – 16 April 2005. ISBIS-4 is a satellite meeting to the ISI Session in Sydney. It will focus on important statistical issues relating to productivity improvement, improved use of quantitative methods to support decision-making at all levels of business and industry, and statistical aspects of Finance.
More information: visit http://www.action-m.com/isbis4 or contact the conference Director, Nick Fisher, at nf@valuemetrics.com.au , phone +61 407 017 016.

University of New South Wales, Sydney
7 – 8 July 2005. Recent Advances in Biostatistics, Bioinformatics and Markov Chain Monte Carlo. http://www.maths.unsw.edu.au/~scott/symposium

Overseas Conferences

2004 International Conference on Official Poverty Statistics (ICOPS)
4 – 6 October 2004 — Mandaluyong City, Manila, Philippines. More information from jfp.dequia@nscb.gov.ph

International Sri Lankan Statistical Conference: "Visions of Futuristic Statistical Methodologies"
28 – 30 December 2004 — Kandy, Sri Lanka
Conference website: http://www.st.rmit.edu.au/~desilva/conference/slstat.htm

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Further contact details for Society Secretaries and Section Chairs can be obtained by contacting the Society on (02) 6249 8266

WESTERN AUSTRALIA

Dr John Henstridge, Managing Director of Data Analysis Australia, is no stranger to presenting at the WA Branch seminars. His appearance at the June 2004 meeting was John's 4th that I remember (and there have probably been others). At this seminar, John gave an active example of where good sample and survey design by statisticians can lead to little variation in the final weights and hence retain high levels of efficiency.

The focus of this exercise was the Perth and Regions Travel Survey (PARTS), a survey of day-to-day travel that Data Analysis Australia is conducting on behalf of the Department for Planning and Infrastructure (see http://www.daa.com.au/parts for more information). PARTS is perhaps the only travel survey in Australia to be primarily designed and conducted by statisticians and this led to a number of innovations.

To put us in the picture, John first described the aims of the survey, which included providing good information on individual travel behaviour for use by transport planners and modellers. In particular, the data collected in PARTS would be used to calibrate transport demand models and understand modal choice. The last comprehensive travel survey to be successfully conducted in Perth was in 1986. The metropolitan area has seen considerable growth since then, as well as changing patterns in road use and travel habits.

The structure and design of PARTS underwent a pilot stage, which saw the data collection phase change from a mailout-mailback methodology to one described as the 'intelligent post-person', involving personal delivery and pick-up of survey packs. This was in response to the challenge of not having a definitive population frame of households and, for reasons of needing both spatial and temporal balance, not being able to use standard cluster sampling. A database of land parcels was used instead and reliable methods had to be developed of identifying occupied dwellings. A Metropolis algorithm was used to define 'balanced' sampling groups, as well as a variation of the Peano-Hilbert index to spatially sample households in sampling groups in the study region.

The travel survey questionnaire comprises of two forms – a questionnaire about people in the household, and a travel diary completed by each person in the household. This provides complex, linked information about a household and its travel for a chosen travel day, which required establishing a sophisticated web-based data entry and management system. A geocoding system and database of all potential features with street addresses were also developed to attach location coordinates to every stop and household.

Once all the data is in, John impressed how the effort doesn't finish there. Queries are followed up with respondents where possible, the data is validated, coded, geocoded, missing values are imputed and weights calculated.

John noted that when the first year PARTS data was weighted, it turned out that the weights had little variation. This was due to the considerable effort and thought that went into the sampling design and selection of the sample. The final result is a travel dataset of 'unrivalled completeness and accuracy'.

NEW SOUTH WALES

Outbreaks, Oysters and Statistically Triggered Alarms

At the May meeting of the NSW chapter of the SSAI, we gathered at ABS offices to hear a presentation by Mark Bartlett of NSW Health. Mark is Surveillance Manager of the Communicable Diseases Branch and was previously the Manager of the Public Health Unit in the Northern Rivers Area Health Service.

Mark gave us a fascinating insight into the collection and analysis of communicable disease notifications. In NSW, there are 40 notifiable Scheduled Medical Conditions, which are notified to the Communicable Diseases Branch by pathology laboratories, general practitioners, hospitals and child care centre directors. The Branch carries out continuing surveillance on numbers of notifications to identify patterns which could signal a cluster or outbreak of cases in the state.

Mark's Branch uses several statistically-based algorithm programs to detect clusters or outbreaks, such as the Real-Time Outbreak Detection System (RODS) and the Electronic Surveillance System for the Early Notification of Community-based Epidemics (ESSENCE).

As an example of surveillance, Mark took us through the tracking of hepatitis A notifications in early 1997 that led to the rapid identification of contaminated oysters harvested from a mid-North Coast lake.

Mark's Branch continue to enhance their surveillance system through improved timeliness of notifications, development of better outbreak detection algorithms and creation of analytic and visualisation tools for clearer data display. To me this is a practical demonstration of the excellence of our much-maligned health system.

A sub-group of the meeting later adjourned to a local Spanish restaurant where topics in epidemiology, health and life were discussed at length.

Ian Nivison-Smith

A new angle on the t-test

The June meeting of the NSW branch of the SSAI was held on the beautiful campus of Macquarie University. It was a very well attended event as people were looking forward to Professor Graham Wood's talk which he billed as "the talk which will change your life!" Graham is Professor and Head of Statistics at Macquarie University and was previously the Professor of Statistics at Massey University in New Zealand.

Graham started off by giving us a quick review of the commonly used t-test which most of us learnt in our first year of university. The t-test is widely used, but also people worry about the usual data assumptions of "normality and independence". Graham developed the t-test in a simple visual way which also shed light on the importance of these assumptions. The key idea is to see the data as a vector in space. For a sample of size two, data samples are a point (or vector) in the x-y plane, with the x and y axes representing the first and second observations respectively. A test of significance (that the population mean is zero) can then be carried out by looking at θ, the angle between the data vector and the 45 degree line, and a 5% critical *cone* can be constructed. The hypothesis that the mean is zero is rejected when $\theta < 45°$ for this two-dimensional situation. Graham pointed out that the only assumption underlying the test is that the data vector directions must not favour any particular direction. The usual assumption of normality and independence guarantees this.

That the use of this angle as a test statistic is equivalent to the t-test became very clear when Graham translated the "θ" test back to the t-test, showing that (for samples of size n)

$$t = \sqrt{(n-1)}\ \cot\theta$$

Graham then illustrated the importance of normality and independence using his visual approach. Since directions of data vectors being uniformly distributed is the single assumption for the t-test it could be seen with some diagrams that this assumption is satisfied if

– The observations are independent and normal
– The observations are independent and the sample size is large enough (symmetry and continuity of the parent distribution can help to reduce the sample size required)

By adopting this visual approach one can obtain additional insight and "see" how important a particular assumption is to the success of a t-test. Independence is far more important, for example, than normality, since that quickly spreads the data vectors throughout the space. On the other hand, it was shown that larger sample size could be dangerous when the data are serially correlated (the data vector is pushed into the critical cone, increasing the Type I error). The talk finished with Graham showing how homogeneity of variance is important in the two-sample t-test.

This is just another example of how statistics and geometry can beautifully work in with each other.

Interested readers (whose lives are not yet changed) are referred to the following:

1. Wood and Saville "A new angle on the t-test" Journal of the Royal Statistical Society (Series D) 51 (2002) 99 – 104.
2. Wood and Saville " The Ubiquitous Angle" Journal of the Royal Statistical Society (Series A) 2005 (to appear).

Frankie Chan

VICTORIA

Estimation of the false negative fraction when multiple negatives are unverified

Professor Chris Lloyd of the Melbourne Business School presented a very interesting talk to the March 2004 Annual General Meeting of the Victorian Branch. He produced a statistical answer to a problem without using traditional and established statistical procedures. Instead, he showed us how to approach the problem like a feral statistician (my term, not his!) – guided by statistical instinct rather than traditional statistical processes.

Chris Lloyd
Photo: Brian Phillips

The problem Prof. Lloyd invited us to consider was one of a series of screening tests for the presence of bowel cancer. Each subject is tested on 10 separate occasions for the presence of blood in faeces. If blood is detected in any of the 10 trials, then the screening test result is 'positive', and the subject is asked to undergo a full test. The full test is expensive and invasive, and so the screening tests are used to reduce the number of test subjects who are fully tested. Any false positives detected by the screening tests add to the number of full tests required, but this must be seen as a small cost compared to the risk of returning a false negative, that is, of not detecting the presence of bowel cancer. The probability of a false positive can be directly measured from the results of the full test, but there is no direct measurement of the probability of false negatives. Prof. Lloyd considered how this probability could be estimated, a problem that seems to have been put in the 'too hard basket' by some knowledgeable people working in the field. (Chris was advised by one journal referee that the false negative probability was impossible to estimate and so he should not try.)

Prof. Lloyd's initial thoughts were to try modelling the data via parametric models using Markov chains and beta-binomial models. These parametric and more traditional types of statistical solution gave estimates of false negative fractions around 23-24%. After a bit of modelling effort a beta binomial model looked like a pretty good fit, although some aspects of it, primarily the level of underlying heterogeneity, did not seem to fit the observed data. So, where should a statistician go from here? Chris developed a technique that enabled him to get an enhanced view of the data and a better appreciation of the patterns that were being displayed in the data.

Firstly, since Prof. Lloyd was able to match the screening test results to the results for the full test, he was able to isolate the test results of those who did ultimately test positive for bowel cancer. Each of these subjects tested positive to at least one of the 10 initial screening tests, which in turn triggered a full test. Prof. Lloyd then asked: if the series of screening tests were limited to x trials rather than 10, what sort of patterns would I see in false negatives as x increases? This was done by looking the test results for the first trial. Of the 196 subjects with bowel cancer, 114 were positive on the first screening test, and 82 were negative. This suggests that the probability of a false negative from a single-trial screening test is roughly 82/196 = 42% (although this estimate is biased since the data are restricted to subjects who returned a positive to at least one of the ten screening trials). When the results of the first two screening trials were examined, there were 48/196 = 24% who tested negative to both trials. Analysing conditional data in this way and modelling conditional probabilities then allows an unconditional false negative fraction to be determined. This technique suggested a false negative fraction of 23.6%.

He then categorised the data by the number of positives returned from a set of ten trials. For those subjects that returned a single positive out of ten, 74% failed the first trial, 61% failed both trials one and two, 56% failed all of the first three trials, and so on. A second row then records for all subjects that returned two positives out of 10 the proportion failing the first trial, the proportion failing both of the first two trials, and so on. Logistic regression techniques can then be used to 'extrapolate to the zero row' in an attempt to estimate the probability of k failures in k trials. This technique gave an estimate of the false positive fraction for a series of 10 trials as 27.8%.

In closing, Prof. Lloyd outlined what he saw as the main advantages of such an *ad hoc* approach compared to a more structured and traditional approach. It allows the data to speak for themselves, and it allows the statistician to study patterns and irregularities in the data, which can be very beneficial in extracting meaning and explanations from the data. Once patterns have been identified they can be extrapolated – and these extrapolations can give further insight and understanding, even if the conclusions presented by the extrapolations cannot be verified.

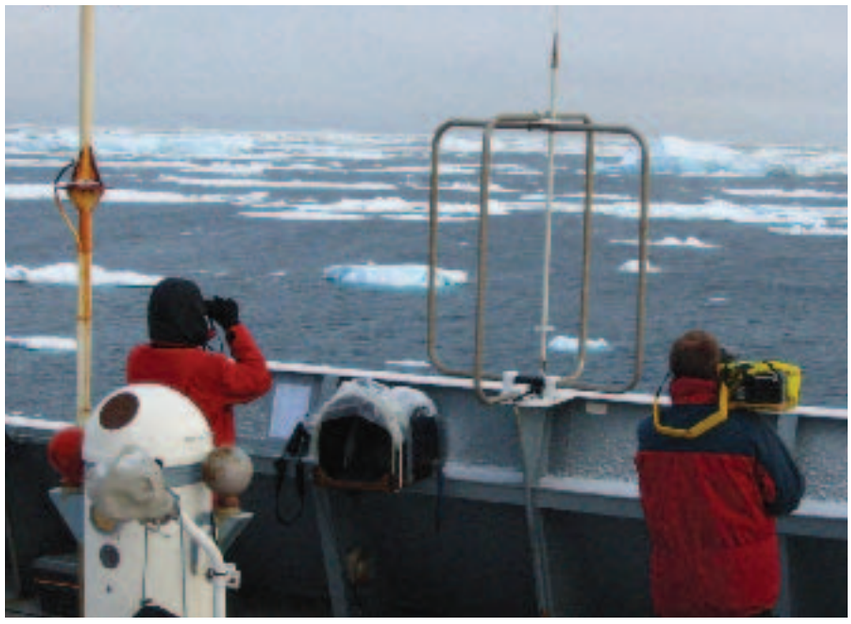
Bruce Fraser

Counting whales

It was, I believe, an English scientist named Shepherd who said that counting fish is just like counting trees, except that fish are invisible and they move. These uncooperative traits have spawned some rather specialised statistical methods for counting our precious sea creatures. Happily, compared to fish whales are slightly easier to count, since they are invisible only about ninety-five percent of the time. Mark Bravington, a CSIRO statistician located at the Division of Marine Research in Hobart, described some of the problems and novel solutions to the May meeting of the Victorian Branch. For experienced campaigners, it was pleasing to note the progress towards realism in the models employed in this field, an essential development if statistical credibility is to avoid being listed as an endangered species in the marine environment.

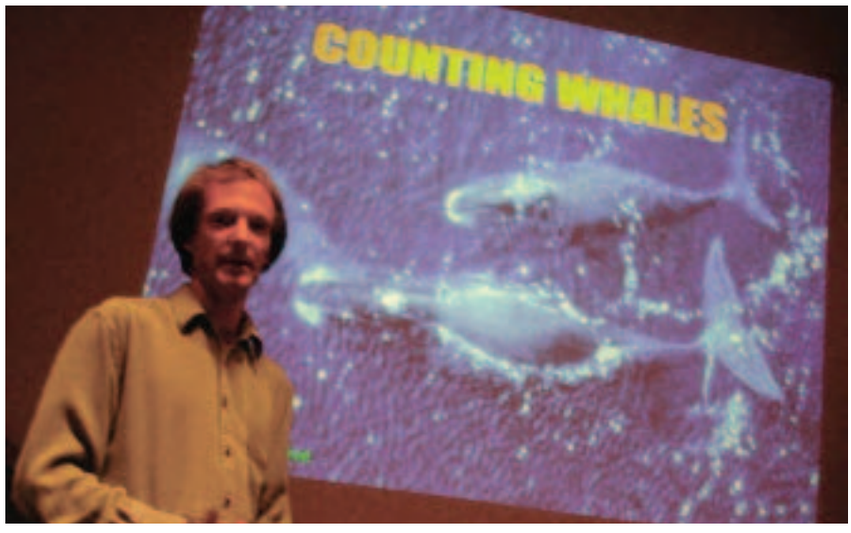
Mark has had numerous projects over the years with the International Whaling Commission. Counting whales, examining trends and plotting their spatial distribution are all tasks likely to help in the preservation of all whale species.

Tag-recapture is a basic tool for estimating the size of natural populations. For some whale species, a tag equates to unique natural markings, for example on the tail flukes. Matching a tag on the first and subsequent sightings relies on analysis of long lens photographs, sometimes taken in poor conditions at differing orientations of the whale's body. The usual tag-recapture theory, which assumes that tags have been identified and matched perfectly, may need to be modified to include the probability that a match has been missed.



Some serious whale watching. Photo: Russell Leaper

However, mark-recapture is not suitable for all species or for very large populations. An alternative, and probably more common, method of estimating abundance involves line transect surveys. This widely-used technique can cover vast areas of ocean. A ship travels along a set of transects, searching for whales over a relatively narrow strip. Whales near the ship are much easier to see than those further away, and line transect theory typically invokes a 'probability of sighting' function, which is 1 along the transect and drops off as the orthogonal distance to the ship's path increases. In reality, the sighting probability may depend on various covariates, such as the weather conditions, the size of the school, the experience of the observer, and so on. In addition, the probability of sighting along the transect may not be 1 for inconspicuous species, or for species such as beaked whales that habitually execute long dives. Some rather clever methods have been invented for estimating the probability of sighting along the transect under such circumstances. These involve two sets of observers on different platforms on the same boat, independently looking for the same whales. If duplicate sightings can be accurately identified *a posteriori*, capture-recapture ideas allow the required probability to be estimated.



Mark Bravington and friends. Photo: Brian Phillips
Whale photo: NOAA Photo Archive

Mark finished with a very brief account of his own work, namely building space and time explicitly into line transect models. Challenges include differentiating between small-scale patterns (noise) and large-scale patterns (signal), uneven spatio-temporal coverage by the survey craft, and robust estimation of the variances of the model parameters. His methods use Poisson spatial random fields, with overdispersion. For once a roomful of statisticians was grateful for a small and biased sample: Mark gave us only a tiny taste of the technical details, towards the less difficult end of the mathematical spectrum. The sizeable audience clearly enjoyed Mark's presentation, in which statistical issues were interspersed with some stunning photographs illustrating the realities of whale abundance estimation.

Geoff Laslett

CANBERRA

Birthday celebrations in Canberra in honour of Chris Heyde and Daryl Daley

At the monthly meeting of the Canberra Branch of the SSAI on Tuesday 4 May 2004, four talks were given to mark the 65th birthdays of Professor Chris Heyde and Dr Daryl Daley, both of the Centre for Mathematics and its Applications (CMA) at the Australian National University (ANU). Introduced by Professor Joe Gani (of CMA), the speakers were respectively Professor Peter Hall (of CMA), Professor David Vere-Jones (of Victoria University, Wellington), Professor Heyde and Dr Daley.

Peter Hall began his talk by reminiscing back to 1973, when he first met Chris and Daryl, and when he was a vacation scholar at the Department of Statistics in the then Institute of Advanced Studies (ANU). Peter was highly impressed by Chris's work, and decided to do a Master's degree under him in 1974 on the topic of martingale central limit theorems. Peter described this topic as akin to malaria, in that once you've experienced it you never quite get it out of your blood. In his talk Peter recounted some of Chris's main research dating from the 1960's. This work was largely on the rates of convergence in the central limit theorem, and Peter described in some detail one of Chris's extensions to the famous Berry-Esseen theorem. Peter has worked with Daryl only once but found the experience very fruitful. He has benefited a lot from the work of Chris and Daryl over the years and feels indebted to, and in awe of the achievements of, both colleagues.

David Vere-Jones has known Chris and Daryl for a long time. Being more closely acquainted with Daryl, David structured his talk around five stages in Daryl's life: (1) Undergraduate and athlete; (2) Bright young graduate; (3) Problem solver, father and musician; (4) Researcher, colleague and advisor; and (5) Carpenter, cook and problem solver. David described some of Daryl's research contributions, these being in the fields of epidemic modelling, stochastically monotone Markov chains, point processes, renewal theory, random measures, queues, and sex bias in educational grading. Two of Daryl's books are "Epidemic Modelling" (1999, co-authored with Joe Gani), and "An Introduction to the Theory of Point Processes" (1988, revised edition 2003, co-authored with David Vere-Jones). In reference to the 5th age above, David said that he has many items of furniture produced by Daryl, and concluded by showing a colour slide of a wheeled coop for hens which Daryl helped David's brother to build during a visit to New Zealand.

Chris Heyde has been in the statistical profession for about 45 years. In his talk he expressed how fortunate he was to have been around when seminal events were happening, and to have heard people like Fisher, Neyman and Pearson speak. The main theme of Chris's talk was the need to promote statistics as a profession, and the challenge of getting as many talented young people to enter it as in the past. The word "statistics" runs the risk of stopping a conversation, and Chris recommends the use of more interest-stimulating terminology such as "risk" and "chance". He also sees benefits from the formation of new structures, for example by alliances of statistics with operations research and econometrics. Chris encouraged the audience to try and transmit enthusiasm for statistics to a few key people, which can make a significant difference. Such enthusiasm can be generated by statisticians being active on committees, and Chris recounted his role on a committee to investigate the effects of agent orange on Vietnam war veterans.

Daryl Daley began his talk by comparing the saying "Location, location, location" in real estate with "Notation, notation, notation" in mathematics. He then discussed some of the notation and terminology used in queuing theory, such as "c channels", "s servers" and the "M/G/1 queue"– of which David George Kendall was the originator – and hence Daryl's preference for denoting a k-server system as D/G/k. Daryl recounted some of his work on stochastic geometry with Dietrich Stoyan, in particular the lily pond problem. This has to do with predicting how much of a pond's surface will become covered by lily leaves, given that a leaf stops growing once it touches another leaf. The problem has generalizations to higher dimensions, but these can be solved only by simulation. Another project on which Daryl has worked is the sex bias problem in school grading. This is due to boys doing slightly better than girls on multiple choice questions and worse on free format questions. Daryl concluded with a kitchen fridge door note to house guests in the home of architect and singer Bryan Dowling, as recounted by his older brother Bishop Owen Dowling at Bryan's funeral earlier that day: "There is no need to go on about yourself. We'll do it after you've gone."

Borek Puza

Professor Chris Heyde and Dr Daryl Daley cut the birthday cake.

SSAI's Canberra office has moved – The new postal address is: PO Box 111, Braddon ACT 2612
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