

## The Common and Contrasting Threads of Risk Assessment

This year's Canberra Branch Knibbs Lecture, titled "The Complexity of Risk" was delivered by Dr. Richard Jarrett, Stream Leader, Quantitative Risk Management at CSIRO in Melbourne. A sizable audience of 50 to 60 people attended, including university visitors from Queensland and overseas. In this talk, Richard explored the nature of risk, and gave some practical examples to illustrate some of the complexities of risk analysis.

The scope of his practical examples was indeed broad, covering bush fires and other natural disasters, gambling in casinos, customs inspections, counterterrorism and security. Other examples mentioned by the discussants Dr. David Service (professional actuary and Senior Lecturer, School of Finance & Applied Statistics, ANU) and Dr. Simon Barry (Principal Research Scientist, Information and Risk Sciences Programme, BRS), and members of the audience included insurance, re-insurance, infectious diseases and agribusiness. While all of these examples had a common thread, each example also had unique elements.

So for example, what do water pipe systems and banking have in common? Water pipes and accounts are assets of water companies and banks, respectively, subject to periodic failure. Failure time can be modeled to assess factors that may predict failure time. For both water pipes and accounts, the probabilities of failure have periodic fluctuations due to season variability (pipes) or economic cycles.

In theory, there's more to risk than the modelling the probability of an event. Risk is generally defined as expected loss, necessarily combining cost or consequence



*Brent Henderson (Canberra Branch President), David Service (discussant), Richard Jarrett (Knibbs Lecturer) and Simon Barry (discussant).*

of an event with event probabilities. A rare event with potentially catastrophic consequences may have a higher risk than a relatively common event with minimal consequences. Risk analysis is often described as a process consisting of identifying risks, assessing probabilities and estimating potential consequences, considering actions to mitigate risk, and monitoring and reviewing the situation once actions to mitigate risk are undertaken. This process could be quantitative, qualitative or a mixture of both. Qualitative analyses provide guidance when there are little or no supporting data, and rest heavily on expert opinion. A more quantitative approach

may be considered when it adds value to existing analyses.

In practice, quantifying risk is fraught with difficulties. Available data may be inadequate to characterise underlying distributions. Organizing available data is often the largest obstacle to quantitative analyses. Probabilities may need to be estimated with little or no data. For example, in risk analysis of state security, probabilities may not be estimable and analyses are concentrated on reducing the impact of a possible terrorist attack. In another example, David Service related a story about deciding on insurance premiums for satellites during the early days before there were adequate

*continued on page 6*

# An open letter

My dear Australian colleagues,

On my recent trip to your country as the first recipient of the AusCan Scholarship, I visited 7 cities, 11 universities, 7 CSIRO offices, and 5 non-academic institutions. I attended 5 SSAI branch meetings and 1 informal meeting with a group of young statisticians in Melbourne. I gave 2 one-day workshops and 18 lectures. It was an intense — but amazing and rewarding — experience.

Organizing and coordinating a trip of such scale was in itself a formidable logistic challenge. The planning took months. I have many, many people to thank. My trip could not possibly have been so enjoyable and memorable without the generous help of these wonderful people: Melissa Dobbie (CSIRO); Doug Shaw (CSIRO); Boris Choy (University of Technology Sydney); Richard Jarrett (CSIRO); Kerrie Mengersen (Queensland University of Technology); Brent Henderson (CSIRO); Steven Roberts (Australian National University); Mark Griffin (Queensland University of Technology); David Allingham (University of Newcastle); Margaret Swincer (WorkCover); Aloke Phatak (CSIRO); Brenton Clarke (Murdoch University); Caro Badcock (Covance); Paula O'Reilly (University of Melbourne); Terry O'Neill (Australian National University); Michael Martin (Australian National University); Alan Welsh (Australian National University); Ross Darnell (University of Queensland); Kathryn Lambkin (CSIRO); Peter Ricci (The Australian Taxation Office); Kaye Basford (University of Queensland); Li Cheng (National ICT Australia); Jun Ma (Macquarie University); Owen Jones (University of Melbourne); Ian Wood (Queensland



*Dr Mu Zhu*

University of Technology); Ross Sparks (CSIRO); Sally Galbraith (University of New South Wales); Graham Wood (Macquarie University); Tony Wohlers (The National Australia Bank); Tony Swain (Queensland Department of Primary Industries); Geoff McLachlan (University of Queensland); Matthew Wand (University of New South Wales); Billy Duckworth (Australian National University); Petra Kuhnert (CSIRO); Richard Huggins (University of Melbourne); Debra Partington (Victoria Department of Primary Industries); and a few others who must, most regrettably, remain anonymous because I, for one reason or another, did not remember their names.

Your many talents and the interesting, innovative, and diverse work you are doing impressed me deeply. You have invented fast and effective algorithms for extracting information from microarray data, elucidated the connection between penalized splines and support vector machines, and made new advances in

the analysis of zero-inflated count data. You are fitting sophisticated Bayesian mixture models to analyze air pollution data and looking for better ways to construct informed priors from expert opinions. You are building smart-sensor networks to monitor your limited water supply and designing efficient strategies to surveil your extended coastlines. You have even taught robots to play soccer and won the world championship title in RoboCup 2006!

Fortunately, despite my busy itinerary, I did manage to find some time to feed a kangaroo and see such Australian landmarks as the famous Sydney Opera House. As to various side effects of my trip, I now find coffee from Tim Hortons quite unacceptable and can boast of having given more than one lecture while holding a glass of shiraz!

I surely hope that you have enjoyed my visit as much as I have enjoyed visiting you, and that you have enjoyed and perhaps even learned a few things from my lectures and workshops. Thank you for your hospitality and for allowing me to have such a great time!

*Mu Zhu  
University of Waterloo  
Waterloo, Ontario, Canada  
December 2006*

## 2007 AusCan Scholar

Applications for the AusCan Scholar 2007 were reviewed and Melissa Dobbie from Queensland has been selected as the first Australian AusCan Scholar. Melissa will visit Canada later in the year. More information about Melissa's visit will be published later.

## In this issue

The Common and Contrasting Threads of Risk Assessment	1	Conferences	4
An open letter from Dr Mu Zhu	2	President's Corner	5
Forum: An investment in Australia's future: why the mathematical sciences matter	3	Three Doors	6
Editorial	4	Obituaries	8
		Branch Reports	11

# An investment in Australia's future: why the mathematical sciences matter

Australia has a critical shortage of suitably trained statisticians in particular and mathematical scientists more broadly. Hence the one-day forum, "An investment in Australia's future: why the mathematical sciences matter", held in Canberra earlier this month.

For me the most important achievement of the forum was a common understanding of the extremely serious problems the mathematical sciences in Australia face. Attending as incoming President of the Statistical Society of Australia I learnt that we are not alone – the engineering profession has very serious concerns about supply of graduates to fill the short and long term needs.

The problems in mathematical sciences appear to be part of a larger malaise effecting Australia's technological capacity.

Among those represented at the forum were significant industry and research groups for whom the supply of sufficient high quality graduates is essential. I particularly valued their insights into how their organisations depend upon mathematical and statistical work to be internationally competitive.

Speaker after speaker explained that the lack of suitably qualified graduates was limiting technological growth in Australia. Dr John Henstridge, a statistician and managing director of the Perth based consultancy Data Analysis Australia, could not attend but his open letter to the forum summed up this point well: "The largest single limiting factor to our growth is the shortage of suitably trained mathematics graduates in Australia. What is affecting us is multiplied many times across Australia. I am frequently asked by clients where they can find suitable staff for mathematical tasks and I have to disappoint them".

I learnt early in life that problem solving consists of three steps. The first step – to recognize that there is a problem – has been achieved. The forum convinced me that there is widespread agreement – among the various vital groups in politics, government, industry and universities – that there is a serious problem with the mathematical sciences. Two recent reviews leave no doubt about its extent and nature.

Indeed, the Canberra forum was held to discuss the National Strategic Review of Mathematical Sciences Research in

Australia conducted under the auspices of the National Committee of the Mathematical Sciences of the Australian Academy of Sciences.

The review report, released last December, provides a comprehensive analysis of the situation, not only in research, but also more widely in education at all levels in the mathematical sciences across Australia. It identifies an immediate need for a substantial capital injection into the mathematical sciences and its recommendations include: broadening the mathematical sciences research base; identifying industry needs and meeting them; ensuring that mathematics teachers have appropriate training in mathematics and statistics to the highest international standards; and encouraging high school students to study intermediate and advanced mathematics.

As for the discipline of statistics, serious concerns began to surface around five years ago. It became clear that there was an increasing shortfall of graduates suitably educated in statistics to meet the needs of employers in business, industry, government and academia. This had become so critical for large employers such as the Australian Bureau of Statistics, CSIRO and certain commercial enterprises that the matter was taken up with the then Federal Minister for Education, Science and Technology Brendan Nelson who asked for suggestions as to what might be done.

The chief response by the SSAI was a comprehensive review, carried out by a team of international experts, and completed in late 2005. The report, "Statistics at Australian Universities", was wide ranging, also taking in school education and involvement of employer groups. The SSAI has established implementation steering committees, one to address recommendations relating to schools and one to address recommendations regarding universities.

This, then, is the second step in problem solving – working out the remedy. The two reports into statistics and mathematical sciences show clearly enough what should be done. Now we face the third and hardest step – having the 'guts' to do it.

I left the Canberra forum feeling that although the mathematical sciences are at a critical point there is hope for a

turnaround. But this will not happen without the continued and collaborative efforts of the professional societies and peak bodies that attended the forum. Political support is crucial and there are very positive signs that this is emerging from both sides of politics.

I also came away from Canberra with a firm view that each sector of the mathematical sciences – including employers – needs to take action and cannot sit back and wait until the problem is solved for them. There are positive signs that individual initiatives are working.

Dr Ian Marschner, director of biometrics at drug company Pfizer Australia, highlighted the worldwide undersupply of biostatisticians with advanced qualifications.

Yet he pointed to the success of Biostatistics Collaboration of Australia – a graduate training program delivered by six universities and a superb example of how the institutions can work together with the support of government to solve a critical skills shortage.

Specialised ventures such as this, together with much broader remedies, are surely the answer to the serious problems facing the mathematical sciences in Australia.

*William Dunsmuir*

This article was originally published in the Higher Education Section of *The Australian* on 28 February 2007.

## Professional Development

SSAI in conjunction with the Australian Pharmaceutical Biostatistics Group is offering **Indirect Comparisons in Health Assessments Workshop** on Friday 30 March 2007 in Sydney.

Registration information can be found at:

<http://www.statsoc.org.au/CPD/ICHAWorkshopMar2007.pdf>





**PO Box 5111,  
Braddon ACT 2612  
Phone (02) 6249 8266  
Fax (02) 6249 6558  
Email: [admin@statsoc.org.au](mailto:admin@statsoc.org.au)  
Society Web Page  
<http://www.statsoc.org.au>**

#### **Editors**

**Alice Richardson**, School of ISE,  
University of Canberra,  
PO Box 1, Belconnen ACT 2616

**Michael Adena**, Covance Pty Ltd  
PO Box 5125, Braddon, ACT 2612

#### **Correspondence**

Please direct all editorial  
correspondence to Alice Richardson.  
Email: [newsletter@statsoc.org.au](mailto:newsletter@statsoc.org.au)

#### **Disclaimer**

The views of contributors to this  
Newsletter should not be attributed to  
the Statistical Society of Australia, Inc.

#### **Subscriptions**

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

#### **Advertising**

Advertising will be carried in the  
Newsletter on any matters which  
the Editors feel are of interest to  
the members of the Society. For  
details of advertising rates, etc.  
contact the SSAI Executive Officer at  
[newsletter@statsoc.org.au](mailto:newsletter@statsoc.org.au)

#### **Printer**

National Capital Printing  
22 Pirie Street, Fyshwick ACT 2609

**DEADLINE FOR  
NEXT ISSUE:  
10 May 2007**

## Editorial

The first month of the year, January, is named for the Greek god Janus. He is traditionally pictured with two faces, one looking forward and one looking backwards. In keeping with the spirit of the beginning of a new year, this newsletter both looks back to meetings held in the Branches at the end of 2006, and forward to events in the early part of 2007.

In particular, the Editors would like to highlight "We're Young and We Count", the conference for young statisticians to be held in Canberra in mid-April. We would like to encourage as many young statisticians as possible to attend, and there are many registrations already. Some interesting patterns of registration are emerging, that have implications for members of the Society, both young and not-so-young. Firstly, it is clear from the registrations already received that many of the participants are not currently members of the Society. It is also clear that many of the participants are from organisations where the young statistician is one of a few, or maybe even the only, statistician employed. This conference therefore has every chance of providing fantastic opportunities for the Society to reach out to young and isolated statisticians. We encourage all members Australia-wide to publicise the conference as widely as possible.

The Editors look forward to receiving reports on this conference, along with all the other activities that Branches have in store for 2007. We don't know what's going on unless you tell us all about it!

## Conferences

### **SSAI Young Statisticians Conference – We're Young and We Count**

13-14 April 2007, Canberra

<http://www.statsoc.org.au/Conferences/2007YSCConf.htm>

### **IMST2007-FIMXV: Fifteenth International Conference of Forum for Interdisciplinary Mathematics on Interdisciplinary Mathematical and Statistical Techniques**

20-23 May 2007, Shanghai, China

<http://imst2007.southalabama.edu/>

### **ISI 56th Session**

22-29 August 2007, Lisbon, Portugal

<http://www.ine.pt>

### **ICAS-4 – Advancing Statistical Integration and Analysis, Fourth International Conference on Agricultural Statistics**

22-24 October 2007, Beijing, China

<http://www.stats.gov.cn/english/icas>

### **ISBS Australasian Region, 'Biometrics on the beach'**

2-6 December 2007, Coffs Harbour, NSW

<http://www.biometrics.org.au>

### **Australian Statistical Conference 2008**

30 June – 3 July 2008, Melbourne

<http://www.statsoc.org.au>

### **International Society for Bayesian Analysis (ISBA) Conference**

21-25 July 2008, Hamilton Island, Queensland

<http://www.maths.qut.edu.au/asba.docs/isba08>

# President's Corner

I'd like to highlight two issues. The first concerns the Australian and New Zealand Journal of Statistics (ANZJS), while the second concerns the National Strategic Review of Mathematical Sciences Research in Australia. However, before doing so, I'll report briefly on the finances from the joint statistical conference in Auckland last year. Whilst it was excellent for those who attended, the number of Australian participants was much lower than anticipated. Our share of the resulting loss is around \$26,000.

I'm pleased to tell you that SSAI and NZSA have negotiated with Blackwell Publishing to provide On-Line Early from the start of 2007. This will be a great service to our members and those who publish in ANZJS. SSAI is also contracting Blackwell to digitize past issues of the Australian Journal of Statistics. They will host the content and provide free access to the content to society members. This will bring us in line with NZSA who digitized their back issues some time ago.

The National Strategic Review of Mathematical Sciences Research in Australia was launched on 14 December 2006. SSAI supported this endeavour as a follow-on activity from the Review on Statistics at Australian Universities where the recommendations were broadly grouped around issues relating to the school programme, organization and funding within and among universities, and image and profile of statistics (including employer/university interactions).

The recent review found that the mathematical sciences in Australia require an immediate and substantial capital

injection to build a critical mass of research, education, industry and government interaction, and ensure we maintain our technical and problem-solving capability. The five key recommendations were as follows:

1. Significantly increase the number of university graduates with appropriate mathematical and statistical training.
2. Broaden the mathematical sciences research base.
3. Identify, anticipate and meet industry needs for a pool of tertiary-trained expert mathematicians and statisticians.
4. Ensure that all mathematics teachers in Australian schools have appropriate training in the disciplines of mathematics and statistics to the highest international standards.
5. Encourage greater numbers of high school students to study intermediate and advanced mathematics.

The outcomes of the two reviews are consistent and reinforce the way forward for statistics in this country.



*Kaye Basford*

E-mail: [k.e.basford@uq.edu.au](mailto:k.e.basford@uq.edu.au)



Hosted by the Statistical Society of Australia Inc

## Mark your diaries!

A stimulating and cutting edge Scientific Program is being developed to cover a wide range of topics relevant to all statisticians. The program will provide practical knowledge and insights from prominent international and Australasian speakers and will address the latest developments in statistical research, education and practice.

Information will be updated through a link from: <http://www.statsoc.org.au/Conferences/> as it becomes available.

**Sofitel Melbourne Monday 30 June - Thursday 3 July 2008**



# Three Doors with Borek Puza (Edition 9)

Welcome to the 9th edition of *Three Doors*. Last time I presented The Conception Puzzle and am now pleased to announce Chris Lloyd as the next winner of the Three Doors Prize, a cheque for \$60 as donated by SSAI. The solution to that puzzle is given below, followed by a well-known paradox and the next puzzle.

## The Conception Puzzle

*A couple decides to have children until they have a child with the same gender as their first one. How many children can they expect to have? Express your answer as a function of  $p$ , the probability with which each of their children turns out to be a boy, and assume that the genders of their children are independent from birth to birth. Also assume that the couple can have an unlimited number of children.*

## Solution to The Conception Puzzle

If the first child is a boy then the number of subsequent children until the next boy is geometrically distributed with parameter  $p$  and mean  $1/p$ . Likewise, if the first child is a girl then the number of subsequent children until the next girl is geometric with parameter  $1-p$  and mean  $1/(1-p)$ . Hence, not including the first child, the expected number of children is  $p*1/p + (1-p)*1/(1-p) = 2$ ; and so the expected total number of children is  $1 + 2 = 3$ . But this answer is valid only if  $p$  lies strictly between 0 and 1. If  $p$  equals 0 or 1 *exactly*, then the total number of children is deterministic and equals 2.

This result is somewhat counterintuitive because it implies that if the probability of a boy (or girl) is very small, say 0.01, then the couple can expect to have 3 children; but if that probability is exactly zero, then the couple can expect to have only 2 children.

The jump here from 3 to 2 can be explained by noting that if  $p$  (or  $1-p$ ) is very small but not exactly zero then the couple is almost certain to have 2 children. However, the number of children could also be any integer greater than 2, with each possibility having a small but non-zero probability associated with it. When one multiplies all the numbers by the corresponding probabilities and sums up the products, the result is 3.

A modification of the problem which restricts the number of children to some realistic maximum leads to an expected number close to 2 when  $p$  (or  $1-p$ ) is near but not exactly zero. For example, if  $p = 0.01$  and the said maximum is 10, then the expected number of children works out as 2.08648. By contrast, when  $p = 0.01$ , the expected number is 2.63027 and 2.99996 if the maximum is 100 and 1000, respectively.

## The Two Envelopes Paradox

A well-known paradox may be expressed as follows. Consider two sealed envelopes each of which contains some money. One of the envelopes contains twice as much money as the other, but you know neither the amounts nor which envelope contains

the larger amount. You randomly select one of the envelopes and consider  $x$ , the number of dollars sealed inside it. You then reason that the other envelope is equally likely to contain  $x/2$  dollars as it is to contain  $2x$  dollars, and therefore the expected amount in that other envelope is  $0.5*x/2 + 0.5*2x = 1.25*x$  dollars. But that's absurd, because there is nothing to distinguish the two envelopes apart from your logic!

This paradox may be resolved by carefully questioning the statement that the other envelope is equally likely to contain  $x/2$  dollars as it is to contain  $2x$  dollars. Indeed, there is insufficient information to work out the two likelihoods, and the key missing component is our prior belief regarding the two amounts. Working through the following puzzle should clarify these issues and perhaps raise some others.

## The Two Envelopes Puzzle

*Consider two sealed envelopes each of which contains some money. One of the envelopes contains twice as much money as the other, but you know neither the amounts nor which envelope contains the larger amount. However, you do know that the smaller amount in dollars was obtained by randomly drawing a number from the uniform distribution between 0 and 1000. You now randomly select an envelope and find \$100 in it. What is the probability that you have selected the smaller amount?*

For your chance to win a fabulous mystery prize, send your solution to [newsletter@statsoc.org.au](mailto:newsletter@statsoc.org.au)

*From page 1*

data to estimate expected loss. Fortunately the decision to charge what the market would bear turned out to be profitable for the insurers.

Discussant Simon Barry remarked that statisticians are often tagged the naysayers of risk analysis and management, pointing out all the inadequacies of available information. In spite of this, risk analysis is something that happens with or without statisticians. David Service reminded us that actuaries are professionally trained risk analysts. Risk analysis is an essential decision making tool in the insurance business, used in estimating appropriate insurance premiums, making investment decisions.

Richard believes that the threat of terrorism has raised a new dimension to risk management, where chance is now "infected" with choice. While the random occurrence of natural disasters or other accidents of nature may follow some law of probability, we are now faced with a group of people who specifically want to make certain bad events happen. He questions whether "Probability" is the right way to describe whether or not such events happen. In natural disaster terms, mitigation works to reduce consequences while not changing the probability of events happening. In the case of terrorism, one set of government actions designed to discourage a particular type of attack may increase the probability of a different type of attack.

Richard concluded by re-iterating his key points: quantitative assessment of risk should be done where it can add value, especially where vital expensive decisions are involved. We should aim where possible to define our measures of consequence and likelihood in terms of "real" things. We should keep, organise and use data that can eventually be used to validate and improve those estimates. We need to have a broader concept of risk than just "expected loss", eg where distribution of potential loss has a long tail to the right. Finally, we need to be aware of the uncertainties in our estimates of risk, especially the unknown unknowns.

*Terry Neeman*

## Young Statisticians' Conference 2007 We're Young and We Count

**Canberra, 13-14 April 2007**

SSAI's Young Statisticians' Conference 2007—We're Young and We Count—will be held in Canberra on Friday 13 April and Saturday 14 April 2007.

The conference offers two days of opportunity for 'young statisticians' - recent graduates, graduate students, undergraduates contemplating a career in statistics and those who are in the early stages of their statistical careers.

A variety of topics will be discussed by both invited speakers and conference delegates. The conference offers participants the opportunity to hear from and meet with statisticians from varying backgrounds who will share their experiences, research and interests.

**Registration information can be found at:**  
<http://www.statsoc.org.au/Conferences/2007YSConf.htm>

## Looking for a job?

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

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

Do you have a job to advertise on the  
website?

Email a position description to  
[mrobinson@wehi.edu.au](mailto:mrobinson@wehi.edu.au). Listing is free!

This service is proudly brought to you by:



## Society Secretaries

### Central Council

President: Prof K. Basford  
Secretary: Dr D. Shaw  
doug.shaw@csiro.au

### New South Wales

President: Ms Caro Badcock  
Secretary: Eric Beh  
e.beh@uws.edu.au

### Canberra

President: Dr Brent Henderson  
Secretary: Dr Ray Lindsay  
ray.lindsay@netspeed.com.au

### Victoria

President: Dr Brian Phillips  
Secretary: Dr Ann Maharaj  
ann.maharaj@buseco.monash.edu.au

### South Australia

President: Ms Margaret Swincer  
Secretary: Ms Janine Jones  
janine.jones@abs.gov.au

### Western Australia

President: Dr Brenton Clarke  
Secretary: Mr Martin Firth  
martyf@ichr.uwa.edu.au

### Queensland

President: Dr Ross Darnell  
Secretary: Dr Helen Johnson  
h.johnson@qut.edu.au

## Section Chairs

### Bayesian Statistics

Kerrie Mengersen  
k.mengersen@qut.edu.au

### Biological Sciences

Ari Verbyla  
ari.verbyla@adelaide.edu.au

### Environmental Statistics

Petra Kuhnert – petra.kuhnert@csiro.au

### Industrial Statistics

Ross McVinish – r.mcvinish@qut.edu.au

### Statistical Computing

Kuldeep Kumar  
kkumar@bond.edu.au

### Statistical Education (Co-Chairs)

Michael Martin  
michael.martin@anu.edu.au  
Peter Howley  
peter.howley@newcastle.edu.au

### Surveys and Management

Veronica Rodriguez  
veronica.rodriguez@abare.gov.au

### Young Statisticians

Janice Wooton  
Janice.wooton@abs.gov.au

### Social Sciences

Michele Haynes – m.haynes@uq.edu.au

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



# Obituaries

## Roy James Cameron

11th March 1923 – 3 October 2006

Roy Cameron was born in Port Pirie in 1923 and spent much of his early life in Waikerie in South Australia's Riverland. In 1940, he began work at the Taxation Office and part-time study toward a BEc at the University of Adelaide.

In 1943, he enlisted with the Australian Imperial Force and saw service in Borneo. In 1946, he recommenced his BEc course, graduating with First Class Honours in 1948. He later graduated as a Master of Economics at the University of Adelaide with his thesis, *Standard hours and the basic wage: an analysis of two aspects of the work of the Commonwealth Court of Conciliation and Arbitration*.

From 1949 to 1951, he lectured at the Canberra University College, benefiting greatly from the renowned economists Heinz Arndt and Trevor Swan.

Roy and Dorothy Olive Lober married in March 1951 at St John's in Canberra.

In 1952 Roy took up a PhD scholarship at Harvard. In his words, "becoming flat broke as a result, despite part-time teaching, I abandoned academia after 2½ years." At Harvard, as in Adelaide, he also studied statistics. With the advice and assistance of Trevor Swan he became an economist at the World Bank in Washington from 1954 to 1956.

Roy returned to Australia in 1956, completing his PhD on *Inflation in a dependent economy, Australia 1945-1955* soon after. At Treasury, he headed the Research and Information Section, a small group harbouring two other Australian Statisticians-to-be - Bill Cole and Ian Castles.

At Treasury he held various other positions, including senior Treasury representative in London in the mid 1960s and First Assistant Secretary, Transport and Industry Division from 1966 to 1973. He played a key role in forming the National Income Forecasting Group, which undertook short to medium-term economic forecasting based on the National Accounts.

From 1973 to 1977 Roy served as Australian Ambassador to the OECD, which he regarded as a reward after 17 years of "interesting though arduous" work in Treasury. The OECD position was clearly a very fruitful part of his life



and something that he enjoyed talking about.

He returned to Australia in March 1977 to be Australian Statistician.

His first challenge was a major upgrade and expansion of computing facilities in the ABS. This was a massive undertaking, involving over 1,500 staff years of work and every Bureau system, and was successfully completed in only four years with little impact on the continuity of statistical outputs. Roy had a strong personal involvement and insisted on a proper project management approach. Staff from that time still speak in admiration of the strength of his leadership on that project.

Other challenges related to expanding work on social statistics and decreasing the processing of administrative records for other agencies:

"On the statistical side of the business, Roy had a significant impact on social statistics. He recognised that the ABS was very efficient in collecting data from households using interviewers. He therefore set about to find resources to expand this work, and did so by cutting back on the large amount of work the ABS was doing helping the States to process administrative by-product information, such as morbidity data. To be fair, the States did not greet this cutback with enthusiasm. However, the result was a much-enhanced and expanded household survey program,

which is still a lasting tribute to the wisdom of his decision on this issue." (Bill McLennan, former Australian Statistician)

His greatest legacy was to change ABS culture, making it much more cohesive and corporate in nature:

"Roy had a most significant and positive impact on the management and operation of the ABS, which I think has not been properly recognised and hence not well appreciated. He came to an organisation that had grown for about 20 years from about 1,000 people to about 4,000 people. It had developed an operating style that Roy called 'a collection of warring fiefdoms'.

"He realised that the ABS was a big, complex organisation and set about ensuring that it was corporately managed. He introduced systematic planning, ensured that a corporate approach was taken to all decisions, put structure into management decisions and insisted that good management control and accountability be embraced." (Bill McLennan)

The Censuses of 1971 and 1976 had suffered negative media coverage concerning privacy. From late 1977, Roy instituted advertisements in major newspapers seeking public submissions on the conduct of the Census. Roy's approach was a key factor in the acceptance and success of the 1981 Census.

Reflecting his high esteem from all sides of politics and his distinguished service, in 1982 Roy was awarded Companionship in the Civil Division of the Most Honourable Order of the Bath, an honour rarely bestowed on civilians in the 20th Century.

Three years after Roy retired as Australian Statistician, Paul Keating as Treasurer recalled at the launch of the 1988 Year Book "Roy, of course held the job down with great distinction."

"Roy was a very impressive thinker, capable of both grasping minute detail and understanding the broader picture in the issues he dealt with. He made an outstanding contribution to the development of the ABS into the internationally respected organisation that it is today." (Ian Castles, the Australian Statistician after Roy)



"I worked very closely with Roy during his tenure as Australian Statistician. I got on very well with him, but I must admit there were occasions of creative tension. Roy was strong-minded and very determined. It was fortunate that on most ABS issues, we had similar instincts on what had to be done. He also had many other people working closely with him, who strongly supported the changes he implemented." (Bill McLennan)

"I will remember him as someone who went out of his way to encourage young staff who he thought had talent – spending time with them undertaking what we now refer to as coaching, explaining the error of your ways when necessary, and encouraging international travel as part of the learning experience. Roy was an outstanding Australian and I feel privileged to have worked with him." (Dennis Trewin, immediate past Australian Statistician)

After his retirement in August 1985 Roy maintained an interest in management and public administration through the ACT Group of the Royal Australian Institute of Public Administration.

Roy enjoyed playing lawn bowls and gardening and had a passion for art. He and his wife also enjoyed international travel, particularly to Europe. But most of all he enjoyed the Australian landscape and frequently took his young children out on weekends to share its beauty and uniqueness. They were able to return the favour in the latter years of his life.

His wife Dorothy predeceased him. He is survived by their children, John, Trish and Peter and his four grandchildren, Fiona, Andrew, Oliver and Stewart.

*Abridged from an obituary by Dennis Trewin.*

---

## David Duncan

### 1916-2006

David Beatty Duncan, who has died at 89 at his home in Oregon in the United States, was an Australian-born statistician who won world-wide academic acclaim.

Duncan grew up in Waverley, the youngest of six children – four boys and two girls – of Watson Cranston Duncan, a detective in the NSW police, and his wife, Frances Adelaide Calman. The eldest son, George, a brilliant scholar, was killed in France in 1916, the year David was born, devastating the family.

When Duncan was 13, his father died. The family was poor and they struggled through the Depression. As soon as they were able, the older children left school and went to work, contributing from their wages to ensure their youngest brother's academic potential was developed.

At Sydney Boys High School, Duncan's results, particularly in the sciences, were outstanding. He enrolled to study agricultural science at Sydney University and graduated in 1937, then taught at Parramatta Intermediate High until World War II. He also did further studies in mathematics.

He joined the AIF in 1939 and was a member of the Sound Ranging Unit. After he had drawn to the attention of his superior officers an error in the maths in the military manual, the value of his mathematical skills was recognised and he was transferred to the RAAF, initially as an instructor in navigation for flight crews. He was later stationed in Melbourne, assessing the effectiveness of pilot training methods. By the end of the war he was a squadron leader.

After his discharge he was awarded a Pawlett Fellowship, a travelling scholarship for agriculture graduates. He elected to pursue a PhD in agricultural statistics at Iowa State University, where he also won the hand of Mary Ann Kohli, who was instructing in the physical education department.

Duncan returned to Sydney in 1947 to lecture in biometrics in the faculty of agriculture at Sydney University. Mary Ann joined him shortly after and they were married later that year. She had left a comfortable life in middle America, which had been barely affected by the Second World War, to come to a country which had been run threadbare by the its involvement in two world wars and the Depression. Their first son, Robert Ames, was born in Sydney.

Duncan lectured at Sydney University for four years. In 1951 the family returned to the US and he was successively a faculty member in the statistics department of the Virginia Polytechnic Institute, a research faculty member in agronomy at the University of Florida, and a faculty member in statistics at the University of North Carolina. This was followed by an appointment in biostatistics at the Johns Hopkins University, in Baltimore, from where he retired in 1983.

In a paper published in 1955, he set out new procedures which came to be

known as the Duncan Multiple Range and Multiple F Tests. These were a new way for deciding if any real differences could be inferred from the observed differences between treatments in an experiment. This removed a weakness in the widely used "t-test" developed 20 years earlier by Sir Ronald Fisher.

The procedures set out in this new paper were quickly accepted in biological experiments. The multiple range paper has been listed among the 25 most cited in world scientific literature. The statistical graduate students at Iowa State College call themselves the Multiple Rangers.

In later years Duncan developed his ideas further, in 1975 publishing *A New Symmetric Multiple Comparison T-test*, what he considered a more philosophically sound approach to decision making when analysing experimental data. This new approach has not had the acceptance of the multiple range test although its originality has been widely acknowledged.

Duncan also worked during summer university breaks at what was then Cape Canaveral, on aspects of the space race and on air force missile tracking problems.

Growing up near the beach, he had developed a love of surfing and he and his growing family came to love the summer excursions to the Florida coast.

In retirement in California, Duncan was honoured as an emeritus professor of statistics, courtesy of the faculty in statistics at Oregon State University.

His early diligence remained throughout his working life. He had a home office into which he would disappear after dinner.

Although he took up American citizenship, he was always proud to acknowledge Australia as the land of his birth. He loved to tell his children and grandchildren stories of his RAAF experiences in World War II, and to recite poems such as *Clancy of the Overflow* and sing *The Road to Gundagai*.

Duncan is survived by Mary Ann, their sons, Robert and George, and daughter, Margaret, and seven grandchildren.

*Malcolm McDonald, Bob Duncan*

This article first appeared in *The Sydney Morning Herald*.

# Australia & New Zealand Journal of Statistics – Publisher Merge

Members will be interested in recent news about Blackwell Publishing, the publisher of the *Australian and New Zealand Journal of Statistics*. On February 2, the merger between Wiley STM Division and Blackwell Publishing took effect, with the UK courts approving what is called the 'scheme of arrangement' for the sale of Blackwell Publishing to Wiley. There is great compatibility between the two companies' publishing programs, markets, missions and values. The merged business will publish approximately 1,250 scholarly peer-reviewed journals (over 1 million pages) and an extensive collection of books with global appeal. This collection of must-have content will be delivered to customers in print and electronic formats, advancing our goal of providing more access to more content to more people than ever before in our history. As the world's pre-eminent society publisher, this new entity will continue to value and nurture close relationships with our society partners, academics and professional organizations.

The senior leadership team for the merged Wiley-Blackwell business has now been announced and Wiley-Blackwell will be organised in five broad divisions: Life Science, Physical Sciences, Professional, Medical, Social Sciences and Humanities. Each division will have a global management team with representation from Asia and will follow the current Blackwell model whereby each journal has its own title team that operates within one of the subject teams.

The impact on Societies who currently publish their journals with Blackwell

will be positive in that the new Wiley-Blackwell company will have greater reach throughout the scholarly publishing world, combining the considerable strengths of both companies into one whole, and guarantee the ability of journals published by Wiley-Blackwell to compete in a tight marketplace. The new company will have increased global reach in marketing and sales and in Statistics the combined strength of Blackwell's journal list and Wiley's books list will make Wiley-Blackwell a true global leader in the subject.

## Member News

Professor Des Nicholls, former National President of SSAI and a member of the Canberra Branch was appointed as a Member (AM) in the General Division of the Order of Australia in the Australia Day Honours List 2007 for service to statistical science in Australia as an academic and through a range of professional organizations, and to the community.

The latest in statistics from Australia,  
New Zealand and the world online.

Published on behalf of the Statistical Society of Australia  
Inc. and the New Zealand Statistical Association

*Your Research*  
*Your Journal*

Read it online at  
[www.blackwell-synergy.com/loi/anzs](http://www.blackwell-synergy.com/loi/anzs)



**Managing Editor:**

**Professor Kerrie Mengersen**

**Print ISSN:** 1369-1473

**Online ISSN:** 1467-842X

**Current Volume:** 48

**Frequency:** 4 issues per volume

# Branch Reports

## QUEENSLAND

### October Careers Day

A seminar was sponsored by the Queensland Branch of the Statistical Society of Australia for students interested in careers in statistics. It was held at two Brisbane locations; University of Queensland on Wednesday 11th Oct and Queensland University of Technology on 18th Oct.

Five early career statisticians explained how they use their statistics training in their careers.

James Doecke, Biostatistician QIMR/RBWH Statistics Unit

Lachlan Mortimer, Office of Economic and Statistical Research

James McBroom, Griffith University

Bonnie Macfarlane, QUT

Kathryn Lambkin, CSIRO

SSAI Queensland would like to thank these statisticians for their input to the day.

### November Meeting and Christmas Party

On Tuesday November 28 Professor Kaye Basford (SSAI President) led a discussion about the Statistical Society of Australia Inc at UQ, St Lucia. The meeting was well attended and many useful comments and views were shared. This was followed by a Christmas Dinner held at Amphora Restaurant in St Lucia.

### February 2007 Meeting

Jay M. Ver Hoef and John K Jansen from NOAA National Marine Mammal Laboratory of the National Weather Service, International Arctic Research Centre, University of Alaska Fairbanks, Fairbanks, spoke at the February meeting. The talk was entitled "Space-Time Zero-Inflated Count Models of Harbor Seals".

Jay Ver Hoef is a statistician, based out of Fairbanks, Alaska, who works for the NOAA National Marine Mammal Laboratory in Seattle, Washington and has research interests in spatial and ecological statistics. Dr. Ver Hoef is a fellow of the American Statistical Association (ASA) and past-chair of the Section on Statistics and the Environment and the Alaska Chapter of the ASA. He is also an adjunct professor of Statistics

with the Mathematics Department of the University of Alaska, Fairbanks.

This is the abstract from his discussion.

*Environmental data are spatial, temporal, and often come with many zeros. In this paper, we take the standard formulation of a zero-inflated Poisson (ZIP) model, as well as an alternative parameterization, and develop a space-time model to investigate haulout patterns of harbor seals on glacial ice. The data consist of counts, for 18 dates on a lattice grid of samples, of harbor seals hauled out on glacial ice in Disenchantment Bay, a coastal bay near Yakutat, Alaska. A space-time ZIP was constructed by using a spatial conditional autoregressive model (CAR) model and a temporal first-order autoregressive model (AR1) for random effects in a ZIP regression model. Because all observable seals are very likely to be detected, we consider a hurdle model that does not mix zeros from the binary and count processes, but still has an inflated number of zeros. We compare this model to the standard ZIP. We create maps of smoothed prediction rates for harbor seal haulouts based on ice density, other covariates, and spatio-temporal random effects. Due to bias concerns, we consider a linex loss function to get the best map for the space-time model.*

Miranda Mortlock

## WESTERN AUSTRALIA

### September Meeting 2006

The September seminar of the WA branch was conducted by Associate Professor Mike Calver of the School of Biological Sciences and Biotechnology of Murdoch University. His talk, titled "Bandwagons, rakes, taboos, statistics and ecological experiments: why the same issues after 20 years?", reflected his experience associated with statistical problems in ecological research. The talk started off with a phrase from a famous ecologist, Charlie Cobb, who said "Ecologists tend to follow bandwagons in using tests of hypothesis and other inferential statistics even though there are problems in finding genuine replicates and are confusing as compared to laboratory experiments."

The problems that the ecologists are facing are "inherently attractive and impossibly messy", he stated. As pointed out by S.Hulbert (1984), generally

the treatments are not replicated and replicates are not independent leading to wrong error terms in the analysis of variance. In order to validate using these arguments Hulbert coined the term pseudo replication which has led to severe problems with a large number of manuscripts rejected on the basis of this. However, he pointed out that, even 20 years after this publication researchers still write manuscripts based on this fallacy. He considered examples related to monitoring animals in the wild, monitoring salinity levels, birds' feeding habits etc., and raised a few interesting discussion points such as: Are large scale unreplicated experiments acceptable if predicted treatment effects are large?; Can meta analysis compensate for a series of unreplicated experiments?.

It was pointed out by the audience that people do time series analysis, HIV studies etc without replication so ecology is not the only area where replication is lacking. Thus it is possible to make assumptions to bridge the gap between not having replicates and having replicates. Mike concluded his talk with what he termed the "last taboo" in ecology with several interesting discussion points such as "Is it worth saving experiments where subsamples are confused with replicates?", "Is repeating the experiment later a solution to lack of replication?" and "Is it valid to say that interactions higher than third order are rare?".

Nihal Yatawara

### Christmas Meeting 2006

Twenty nine members and guests enjoyed a great night out at a local Thai restaurant for the WA Branch Christmas Function. In addition to the banquet meal, we were treated to a sample of Thai dancing and music.

Our President, Brenton Clarke, rose to give us a few words and wish us an enjoyable festive season. He also took the opportunity to farewell and thank one of our long term committee members, Berwin Turlach, who has left our sunny shores to take up a post in a Singaporean university. Our gift of a boomerang was to encourage Berwin to return to us one day!

Anna Munday



## MAWA Secondary Convention

In the last edition of this newsletter, we included an article regarding a joint get together of statisticians and maths teachers, whereby 6 young statisticians publicised their education, work and career paths to date to promote statistics and give maths teachers a feel for how they, as teachers, can be an inspiration to their students in taking up further mathematical/statistical studies. As a result of the positive feedback received on the night, the President of the Mathematics Teachers Association of WA invited the speakers to present their talks at the Mathematical Association of Western Australia (MAWA) Secondary Convention held later that month.

Carl Mackin, Christopher Milne and Anna Munday accepted the invitation and went down to the Esplanade Hotel, Fremantle, where we were treated to a scrumptious lunch before giving our talks to a roomful of interested mathematics teachers. Brenton Clarke also attended and did a fine job of promoting statistics and introducing the speakers. All in all, I feel that the interaction we have instigated between the statisticians and maths teachers in WA is very positive, and can only help to further benefit both statistics and mathematics in the future.

*Anna Munday*

## VICTORIA

### Forecasting and the importance of being uncertain

Over 80 people enjoyed the 38th Belz lecture, held in the Old Geology Lecture Theatre at Melbourne University, on October 24. The lecture was given by Professor Rob Hyndman from Monash University. Rob began the talk with a recent news item in which a Russian woman is suing weather forecasters for wrecking her holiday. Alyona Gabitova had been promised 28 degrees and sunshine when she planned a camping trip. But it did nothing but pour with rain the whole time, leaving her with a cold. Gabitova has asked the court to order the weather service to pay the cost of her travel. He then gave a number of amusing forecasting quotes including "I think there is a world market for maybe five computers." (Chairman of

IBM, 1943) and "We are ready for any unforeseen event which may or may not occur." (Dan Quayle)



*Rob Hyndman giving the Belz Lecture*

Photo: Brian Phillips

Rob gave a brief history of forecasting, including examples of ancient forecasting methods, such as using a sheep's liver, hallucinogens and vapour-ridden caves in the mountains of Greece. There was even a time when the British Vagrancy Act made it an offence to defraud by charging money for predictions. The punishment was a fine or three months' imprisonment with hard labour.

He claimed that some standard forecasting business practices today are no better than a sheep's liver or hallucinogens. This was demonstrated in the following promotion piece:

*[Our program] utilizes database technology for real-time data collection and reporting. A common interface for all users fosters collaboration and increases the accuracy of data entry. There are no formulas or macros to create, no tedious re-keying of data and no mystery links to chase down and fix. [Our] built-in "financial intelligence and business rules" builds the formulas for you ensuring 100% accuracy.*

Professor Hyndman explained that these methods are largely guesswork, highly subjective, not replicable or testable, and with no possible way of quantifying probabilistic uncertainty.

The lack of uncertainty statements leads to a false sense of accuracy.

He argued for the importance of statistical modelling in forecasting, and demonstrated the dangers that occur when uncertainty is ignored. In particular, he considered the importance of prediction intervals in providing forecasts, and the dangers of "what-if" scenario projections that are popular in business and government. He outlined some problems involved with data mining predictions and outlined some advantages of using stochastic models.

This was demonstrated via two case studies, one on forecasting the Pharmaceutical Benefits Scheme (PBS), the other on predicting the Australian population. An ABC news item had shown that the Federal Opposition had called for tighter controls on drug prices after the PBS budget blew out by almost \$800 million. Rob found that the Department of Health and Aging were doing all forecasts with the FORECAST function in MS-Excel applied to three points of 10 year old data! Rob tackled this problem with time series models, using automated exponential smoothing state space models applied to about 100 product groups. The methodological tools were developed in 2002 and published in the *International Journal of Forecasting*. The results show that the forecast error is now only a few million dollars per year. In the population study, he pointed out distinctions between projections and forecasts, and how better use could be made of prediction intervals with specified probability coverage for population size and relevant derived variables.

He claimed that our traditional emphasis on p-values has been distracting and unhelpful. Rather he believes that most statistical problems are better expressed as prediction problems. Some implications he sees for statisticians include the need to learn what data miners are doing and contribute to the development of their methods, to know (and teach) a lot more computer science, and to teach data mining methods alongside statistical methods in universities. Furthermore he foresees that statisticians will place less emphasis

on p-values and more emphasis on the predictive ability of models and thinks it will become common to compute prediction intervals for data mining methods. After the talk there was a vigorous question and answer session.

Overall Rob's talk was most entertaining, informative and brilliantly presented. The slides of this presentation are available from <http://www.robhyndman.info/>

Following the lecture 36 attendees enjoyed a very nice meal and further animated discussions at The University Café in Lygon St.

*Tristan Barnett and Brian Phillips*

## SSAI Service Award

Preceding the 2006 Belz Lecture, Ray Watson was presented with an SSAI Service Award by Neville Bartlett. This was conferred for his long involvement in SSAI activities, in particular his role as the Technical Editor for the Australian and New Zealand Journal of Statistics from 1998–2005. Many thanks for your contributions, Ray!



*Ray Watson (left) and Neville Bartlett*

Photo: Brian Phillips

## Bayesian Methods Workshop

On 28 and 29 November 2006 the Victorian Branch sponsored a very successful two-day workshop on Bayesian methods, presented by Kerrie Mengersen from the Queensland University of Technology. In a similar

way to the previous year, it replaced the regular November Branch meeting. The workshop was held at the Swinburne University of Technology in Hawthorn, and was very well supported with 21 participants on day one and 19 on day two. Approximately 60% of attendees were members of the SSAI and three were students. The workshop was aimed at people who wished to learn to use Bayesian models, or who wanted to improve their competence with Bayesian models. Generally they already had sound knowledge of statistical methods, though most had virtually no previous knowledge of this topic.



*Professor Kerrie Mengersen*

Photo: Brian Phillips

Kerrie explained how Bayesian modelling and data analysis are becoming a standard part of the statistical toolkit. She showed how its appeal includes the availability of hierarchical models for better describing complex systems, the use of priors to describe uncertainty and include external information in the analysis, and the direct probabilistic interpretation of the results. She explained how while simple Bayesian models can be analysed analytically, most analysis is via Monte Carlo methods such as Markov Chain Monte Carlo. There is a great range of MCMC algorithms available now for Bayesian computation.

This two-day course introduced the practising statistician to Bayesian analysis. The course was very practical, with emphasis on understanding the fundamental concepts, modelling in a Bayesian context, using MCMC

and 'doing' Bayesian analysis via the software package WinBUGS, which is freely available on the web.

There were eight sessions, mostly involving hands on computer work, as follows:

- What is Bayesian statistics?
- Doing Bayesian analysis: principles of Markov Chain Monte Carlo
- Introduction to WinBUGS
- Using WinBUGS
- Developing an MCMC algorithm
- Constructing Priors
- Case Studies
- Expert Driven models

The workshop proved to be a great success with participants giving it wonderful accolades. A number of participants have told me they have implemented ideas from the workshop already since the workshop. One told me "It was terrific and inspiring. I've tried one analysis already." However, it was seen as quite challenging by some, as one student participant wrote "I have to say that the subject matter was very challenging. However, there was enough background material included to allow people with virtually no experience in Bayesian statistics to keep up with the program, even when the advanced topics were introduced. And although I would not say that the workshop made me a proficient user of Bayesian methods, doing the workshop gave me enough knowledge to understand and evaluate publications where Bayesian analyses were used."

The web page for the workshop is found at

[http://www.statsoc.org.au/Branches/VIC/Bayesian\\_Workshop/Bayesian\\_Workshop.htm](http://www.statsoc.org.au/Branches/VIC/Bayesian_Workshop/Bayesian_Workshop.htm)

Thank you, Kerrie, for a great workshop.

*Brian Phillips*

## Who Needs the Cox Model Anyway

In December Bendix Carstensen, Senior Statistician at the Steno Diabetes Centre and Adjunct Lecturer at the University of Copenhagen, gave a presentation to the Victorian Branch with the provocative title "Who Needs the Cox Model Anyway?". Bendix's

contention is that in the last 30 years, survival analysis has been virtually synonymous with application of the Cox proportional hazards regression model. If survival studies are, however, viewed in the demographic tradition, the basic observation is not one of time to event (or censoring), but rather many small pieces of follow up from each individual. The modelling of rates rather than time to response becomes the focus with the basic response a 0/1 outcome in each interval and an interval length. Time is then correctly viewed as a covariate rather than a response, and the modelling tools needed reduce to Poisson regression (and ultimately logistic regression).



*Bendix Carstensen*

The Cox model may then be viewed as a special case of a Poisson model where the detail in modelling of the time covariate has been taken *ad absurdum*, namely with one parameter per failure time. An advantage of the demographic view is that it encourages researchers to consider explicitly which timescale(s) to use and to what degree of detail it is relevant to model its effect on rates.

Poisson modelling of disease rates and follow-up studies in epidemiology has traditionally been restricted to analysis of tables where rates have been assumed constant over fairly broad time spans, typically 5 years,

which in cancer epidemiology is considered a short age-span. Such an approach was necessary 20 years ago due to the lack of computational power, since splitting of the follow-up period into many observations requires datasets with 10-50 times as many observations as persons. Bendix noted that the Cox model is perfect for those who have to analyse their data with pre-1985 computing equipment! Through the teaching and software development efforts of David Clayton and Michael Hills, software solutions are now available for at least Stata, SAS and R, making this approach widely accessible.

The only remaining advantage of the Cox model is the ability to easily produce estimates of survival probabilities in (clinical) studies with a well-defined common entry time for all individuals. This can, however, also be produced from a Poisson model with little extra effort.

After the talk the speaker, members and guests dined at a local restaurant and debated the topics of the day, which included calculating the probability that students could pass multiple tests by chance, the ownership of the University of Melbourne, and the woeful performance of visiting sporting teams.

*Lyle Gurrin*

### **Victorian Young Statisticians**

In the past couple of months, the Victorian Young Statisticians have been busy with recruiting more members, holding meetings and organising the meeting schedule for 2007. In November, we held a meeting at which Dr Mu Zhu from the University of Waterloo was the guest presenter. He shared with us his background, experience and the challenges he faces as a relatively new academic in the University system. The meeting then opened up as a discussion, where we all shared our experiences and challenges, and learned a lot about each other. There were 12 of us in total, including quite a few newcomers, which was great to see. In December, we held our end-of-year party at a local pub near Melbourne University. It was fun to reflect on the past year, relax and have a general catch up. We are currently

organising the schedule for this year's meetings, in which we plan to hold some formal presentations, as well as discussion sessions geared around particular focus topics.

*Kris Jansen*

## **NEW SOUTH WALES**

### **J.B. Douglas Postgraduate Awards**

In the afternoon of 29 November 2006, the NSW branch hosted the seventh annual J.B. Douglas Postgraduate Awards Day at Macquarie University. These awards are in recognition of Professor J.B. Douglas's contribution to statistics and econometrics. At this annual event, seven postgraduate students from NSW universities presented interesting topics in statistical research.

The topics of the presentations came from a broad range of areas, ranging from classification methods to choice modelling, to the analysis of x-ray scattering methods. Presentations were made by Raed Alzghool from the University of Wollongong, John Ormerod from the University of NSW, Fabien Huard from Macquarie University, David Pihlens from the University of Technology, Sydney, Trevor Moffett from the University of Newcastle, Vivek Jayaswal from the University of Sydney, and Greg Falzon from the University of New England. The quality and content of these presentations were outstanding and three J.B. Douglas postgraduate awards were given to David Pihlens, Greg Falzon, and John Ormerod.

After the presentation of awards and certificates by Caro Badcock, President of NSW branch, Sue Wilson from ANU gave the keynote lecture entitled "Statistical Science as an Integral Part of the 'Omics Revolution'".

The evening was concluded with the annual dinner of the NSW branch, where participants and members engaged in some very interesting discussions based on the talks and other topics. NSW branch would like to congratulate all of the presenters for giving a thought provoking insight into many areas of active research.





*Presentation of certificates by Caro Badcock, President of NSW Branch*



*Prof Sue Wilson at the Annual Dinner*



*Photo taken after a delicious dinner at the Annual Dinner*

## SOUTH AUSTRALIA

### 2006 Sir Ronald Fisher Lecture

On Friday 10th November 2006, the Sir Ronald Fisher Lecture for this year was held at the University of Adelaide. This continued a series of lectures to commemorate Fisher's strong association with scientists in Australia. The speaker was Professor Terry Speed, and the event was supported by the SA Branch of SSAI in place of our November meeting. His talk was entitled "Recombination and Linkage" and it attracted a wide range of statisticians, geneticists and molecular biologists.

The talk began with an overview of meiosis and how recombination occurs. The need for map functions to convert recombination fractions into map distances was explained, and Haldane's map function was introduced. This assumes that recombination events follow a Poisson process and hence these events are independent, implying that there is no interference. However, there is much empirical evidence that interference does exist - the number of double recombinants between three loci is generally less than you would expect under the Poisson model.

Hence various stochastic models have been developed which attempt to model this interference, such as renewal processes and count-location models. Renewal process models were introduced by RA Fisher in a 1947 paper. Fisher's renewal process was on the meiotic products (one-strand model) and not a four-strand model, and this led to the possibility of recombination fractions greater than  $\frac{1}{2}$ , which is not believed to be possible biologically, although it fitted Fisher's data (on mice) well. If Fisher had used a four-strand model, it would compare favourably with other chi-squared models used today. Interestingly, Professor Speed has recently been in email contact with a co-author on Fisher's paper, Mary Lyon, who is still alive.

*Paul Eckermann*

### John Darroch Dinner

The Pitman medal is a gold medal awarded no more than once a year by the Society 'in recognition of outstanding achievement in, and contribution to, the discipline of Statistics'. In 2005, John Darroch was selected as the Pitman medal

recipient, with the official presentation being made at the 2006 Conference in Auckland, New Zealand.

In February 2007, the SA branch of the Society held a special dinner to celebrate John's achievement, which was attended by more than 40 Society members and invited guests. Several of John's former colleagues from the wider mathematical sciences community at Flinders University were present, including Professor Brian and Val Abrahamson. Professor Abrahamson, the Foundation Professor of Mathematics at Flinders University, had been at the University of Cape Town, South Africa, at the time that John studied for his PhD there.

Talks were given by Gary Glonek, current Head of the Discipline of Statistics at The University of Adelaide and former

PhD Student of John's, and Alan James, a previous Pitman medal recipient. Both speakers talked about John's contributions to the field of statistics, including his work on the analysis of categorical data, his 30 year career at Flinders University, and his involvement in the Splatt Royal Commission. John also gave a talk about both his statistical career and his life in general, including reminiscences of his time in South Africa. Recognition was given, not only to John, but also to the two other Pitman medal recipients who attended the evening, Alan James (1992) and Graham Wilkinson (2000).

Special thanks must go to Alan Branford, who organised and hosted the evening.

*Lisa Yelland*



*John Darroch, 2005 Pitman medallist, addresses his fellow guests at the dinner held in his honour by the SA branch.*



*South Australian Pitman Medallists (L-R): Alan James, John Darroch and Graham Wilkinson.*