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Share, Learn and Connect

The big event for the year for Young Statisticians was always going to be the Young Statisticians Conference. This was organised to provide a friendly atmosphere for discussion and learning for young statisticians. Going along with the conference theme that we chose – "Share, Learn & Connect" – we gave young statisticians the opportunity to share their work; we invited some experienced statisticians to speak, and we included plenty of opportunities in the program for networking and discussion.

The event was held at the Boulevard on Beaumont Hotel, Newcastle, on September 26 & 27. The venue was a beautiful 4½-star hotel on a main street with a number of bars and restaurants to choose from as evening options. It was only a short ride on the bus to get down to the beach too, so it was a nice location. There was a balcony attached to the meeting room also, which had a great view of around Newcastle.

We had just over 50 people come to the conference, many from interstate from all of the mainland states, plus several came all of the way from New Zealand. The conference got under way with a short welcome speech and then talks from two of the invited speakers: Rick Middleton, Professor of Electrical Engineering at Newcastle University, spoke about Robot Soccer. It was a lively and interesting way to get things started, and the short video clips of robots playing such added to the entertainment value. Then Caro Badcock from Covance crossed over to the pharmaceutical industry and talked about some specific drug trials, and what was involved in this. This gave people a nice insight into this area of statistics. To finish off the morning some contributed talks were given by a number of young statisticians. There were some fairly theoretical topics covering logistic regression, hierarchical models, and also a talk about what it is like to work for various different companies.

Young Statisticians relax on the boat during the dolphin-watching excursion.

We all had a break from statistics after lunch and headed up to Nelson Bay for a dolphin-watching excursion. This gave everybody a chance to relax and certainly to mix with the other young statisticians. It was a beautiful, sunny day and everybody enjoyed the afternoon. We arranged for the evening a cocktail party together with a poster session. There were plenty of posters to go and have a look at, and it was a good session with people moving around to look at the posters, grabbing a cocktail snack or a drink from the bar. We abandoned the idea of going afterwards to a restaurant because everybody was too full from eating the nibbles, so we met up at a coffee house later on instead.

The second day was got underway by Dennis Sinclair from Sinclair

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Young Statisticians Conference

Associates. Dennis briefly discussed what had happened to him in his career, and then went onto talk about the 'Six-Sigma' approach in industrial statistics. This is an approach that has been taken on by some major companies, and Dennis discussed the philosophy and implementation of this approach. The rest of the morning was dedicated to contributions from young statisticians. There were 10 contributed talks given, making a total of 15 for the meeting. There were plenty of interesting talks, and we heard about areas of statistics ranging from ecology to finance, Bayesian statistics, animal behaviour, and more.

We broke up the day by organising a bus to take everybody down to the mall briefly for lunch arrangements and then a lot of us wandered off to the beach to enjoy a swim, or a game of touch football on the beach, or just relax and read a book. It really gave us the chance to experience a good piece of Newcastle while we were there.

Once we all got back from the beach, we were lucky enough to hear from Ross Sparks, who has done a lot of work with CSIRO. Ross spoke about challenges that are being faced where privacy and security of information

Left: Young Statisticians relax on the boat during the dolphin-watching excursion.

Below: Dolphins are sighted!

More Conference Photos on page 15

are major concerns. It was most interesting to hear about this very relevant area of statistics. The final invited talk was delivered by Kerrie Mengersen, Professor of Statistics at Newcastle University. Kerrie talked about Bayesian Modelling, and everybody enjoyed the very clear explanations that were provided and the interesting applications that were discussed.

The final conference session was used for a discussion on networking and professional development. Everybody broke off into groups and offered their ideas for discussion. The focus was on three things: the strengths of the young statisticians group, what their needs are, and actions – what people would like to see happen in the future. The discussions were very productive and a lot of useful feedback was gained.

On the final evening we held a conference dinner. This was the last chance for people to mix with the young statisticians before everybody went back home, and the group took a little while to depart after dinner had finished. But during the dinner, the prize for best contributed talk was given. This was a $100 book prize from John Wiley & Sons, and the winner was Patrick Fogarty

Continued next page

FEEDBACK FROM YOUNGSTATS FORUM – YOUNGSTATS CONFERENCE SEPTEMBER 2003

What are our strengths as young statisticians?

- Diversity: in skills, background and applications (multidisciplinary)
- Technology: familiarity and adaptability
- Academic training: breadth of training
- Flexibility: not set in ways, ability to think without concern for bureaucracy, open-mindedness, retirement is far far away
- Enthusiasm

What are our needs as young statisticians?

Career information

- Job advertisements
- More information about possible careers + advertise this

Publishing

- Hints on selecting where to publish and informal review system

Networking

- Annual conference of this nature
- Communication/marketing of YS existence and website
- Travel funds, especially for those not on the eastern seaboard
- Ways of being able to communicate ideas, skills
- Mentoring system within the Society
- Interactions with others in the same field and across fields

Professional development

- Conferences: specialist + nonspecialist (simple level, more general talks)
- More exposure to industry consultants/experts
- Help with presentation methods
- Promote ourselves (eg our own tv show)
- More information online

What actions can we take to meet these needs?

Communication and information

- Discussion email list
- Bulletin board
- Expansion of YS website
- AYS component of the ASC + pre-conference workshops (intro to stats etc)
- Posters around campus – get unis involved

Professional development

- Workshops (skills-based, topics-based, software-based)
- Conferences: specialist + nonspecialist (need clear goals for conferences)
- Conferences/workshops with industry/nonspecialists attending (reveal job opportunities, keep talks simple)
- Career planning meetings/material
- Material/other help with presentation methods (also through YS conference)

From page 2

from ABS, who talked about "The Smoothness Criterion as a Local Trend Diagnostic".

I feel that the conference was a great success, and it was great to be involved. There were so many good talks and posters that were contributed; the invited talks were most informative and interesting; and the group got along really well and enjoyed the opportunity to meet the others there. We can look forward into the future for more young statisticians activities for everybody, and it would be great to see another young statisticians conference being held again, perhaps next year.

Those are my thoughts and summaries of the conference. I've included below the testimonials of two young statisticians who attended the conference.

Ben Stewart-Koster won the YoungStats 2003 Sponsorship from the Queensland Branch of the Society to attend the Young Statisticians Conference. Ben delivered a talk on "Statistical modelling and the problem of scale in ecology". Ben had the following to say about his experience:

> "…I came down from Brisbane and I really enjoyed the whole weekend. I have really only had experience with the ecological applications of statistics, so it was great to see what other statisticians are doing. It was great for networking too. Giving a talk was a super opportunity to show others what I have been doing which opened doors to further discussions and networking opportunities afterwards."

Patrick Fogarty won the $100 book prize with the talk "The Smoothness Criterion as a Local Trend Diagnostic". Patrick shared the following thoughts on the conference.

> "The conference was a great opportunity to meet other people new to the field of statistics. Having studied statistics with only 2 other students, it was a pleasure to meet so many other people working and studying in the field within Australia, even if many of them were Kiwis (just kidding guys). Newcastle was a fantastic venue and the conference was well organised, providing the chance to share our experiences, and make contacts and friendships that will hopefully last throughout our careers."

Simon McGregor-Macdonald
Chair, Young Statisticians Section

Data Availability Workshop

DATA AVAILABILITY AND STATISTICAL METHODS FOR THE USE OF GOVERNMENT DATA IN SOCIAL RESEARCH WORKSHOP

Above: (L-R): Peter Brandon, Diane Gibson, Stephen Horn, Terry Neeman and Phil Kokic.

The September 2003 SSAI workshop, Data Availability and Statistical Methods for the Use of Government Data in Social Research, was an afternoon and evening statistics workshop at the ABS House in Canberra, featuring five statisticians in prominent roles in government agencies. The workshop, organised jointly by the SSAI Canberra Branch and the SSAI Survey Section, drew a large audience from three Australian states and New Zealand. The speakers were Stephen Horn from the Department of Family and Community Services (FaCS), Diane Gibson from the Australian Institute of Health and Welfare (AIHW), Peter Brandon from the University of Massachusetts Amherst, Phil Kokic from the Australian Bureau of Agriculture and Resource Economics (ABARE) and Geoff Lee from the Australian Bureau of Statistics (ABS).

Mr. Stephen Horn, statistician at the Department of FaCS, gave a philosophical discussion of the role of government statistics in social policy research. He described an ideal vision of evidence-based policy development as a dynamic process that makes intelligent use of statistical methods and official data collections to address social policy questions, propose policy changes and assess the impact of those decisions. Statisticians play a central role in this process. These statisticians may work in the government agency that collects and controls these data, or they may work in other agencies that own some source data, that they may use together with other official data to develop and evaluate policies.

In this capacity, statisticians may face enormous challenges. While the goal of good policy may be to improve individual well-being or strengthen community spirit, the tools used to measure these lofty goals are very rough at best. Even the attempts to ask more straightforward questions such as "what are the characteristics of people who remain on income support for long periods of time", or "what is the relationship between time on income support and being a sole parent" can be complicated by unclear definitions, complex outcomes, possibly inappropriate time frames of measurement, and the age-old difficulty is assessing whether there is a causal mechanism underlying an apparent association.

The Department of FaCS has come some way in meeting these challenges. They have developed clear definitions that allow unambiguous classifications of individuals into subpopulations.

They are also developing longitudinal data sets in order to that measure flows, histories and long term outcomes. They encourage publication of research using their extensive database in order to fuel an open discussion of policy and analytical methods. By publishing commissioned research and opening their data resources to non-commissioned public research access, they contribute to open, informed debate on policies themselves, and stimulate examination of analytical methods appropriate to the resource within the official constraints placed on data-owners.

Stephen expressed his optimism for the future of information driven policy. It is a future of large research-friendly usable databases, database linkages, well-formulated questions, advancing methodologies and well-informed debate. Statistics and statisticians, he estimates, have an important role to play in this future.

Dr. Diane Gibson, Division Head of Welfare at the AIHW, was an animated and engaging speaker who offered her personal perspective on the challenges and opportunities in social policy research using large government data collections. In her years as an academic researcher, she excelled in the scientific methodological approach of identifying interesting socially relevant questions, designing tools to collect appropriate data, and analysing these data to produce answers to these questions.

Moving into the government sector, she was struck by the contrast in approaches. First, she had to work out what data were available or more critically, what data were accessible. Administrative by-product data were abundant, but not reliably in a usable format. The social policy questions were then the ones that the data might address. These were formidable challenges. These were census collections, rather than samples, although missing values could be a problem. They were not collected at a single point in time (cross-sectional) or at regular intervals (longitudinal), but rather as part of a continuous collection. There was a need to measure flow through the welfare system as well as characteristics of clients currently in the system.

With their analytic skills, statisticians have a critical role to play in the development of evidence-based policy. They are an integral part of a team that includes those with an intimate understanding of the data and those with an interest in policy. In Diane's experience, the skills needed to develop good policy that makes a difference in society are rarely seen in a single individual. As she put it, people interested in policy are rarely passionate about numbers, and pure statisticians find the policy world intellectually messy to say the least.

Diane emphasised that good statistics really matters, and in her concluding remarks, left us with some specific examples where statisticians have made a difference. It took some good statistical work to estimate probabilities of ever using resident-based care. This work was critical in assessing the relevance of impending resident-based care policy on the average Australian. There is currently a debate about bedblocking in our acute hospitals by older people waiting for more appropriate placement in nursing homes. Good statistical thinking is needed to assess how information might be extracted from existing administrative by-product data to best inform this debate.

Dr Peter Brandon, of the Department of Sociology at the University of Massachussetts, USA, gave a very enlightening talk on the analysis of longitudinal surveys for policy research. Peter, who is originally from Australia, is currently on sabbatical until January at the Research School of Social Sciences at the Australian National University. He is also doing some consulting work for the Department of Family and Community Services.

Peter began by talking about the strengths of longitudinal data. This type of data is best for describing phenomena and relationships that by nature take place over time. It provides a better understanding of socioeconomic processes and behaviours, and is therefore more suitable for informing policymakers than cross-sectional 'snapshot' data. Longitudinal data provides a focus on dynamic processes rather than 'problem groups' at a point in time, and therefore enables the provision of policy-relevant information (i.e. context) rather than just the evaluation of specific programmes.

Peter talked about different types of longitudinal survey design, in particular retrospective and prospective studies. The former, examples of which are the NSFH (National Survey of Families and Households) and NLS (National Longitudinal Surveys) in the USA, are cheap and 'fast' but suffer from recall error and survivor bias. The latter, which include household panel surveys, are statistically preferable but expensive and 'slow'. They also suffer from non-random attrition.

One of the projects Peter has worked on has to do with entries into and exits from welfare in the USA. This project studies the effects of disability, increases in minimum wages, and children's living arrangements. One of the graphs he displayed consisted of four lines, each representing the monthly probability of exiting welfare at different levels of state benefits for a particular category. These categories were where the child is disabled, where the parent is disabled, where both are disabled and where neither are disabled.

Peter discussed the political problems associated with the type of research he has conducted. For example, one of his findings is that if minimum wages were to increase slightly, mothers on welfare would be *less* likely to leave welfare. This finding caused a furore because it was seen as going against a push for increasing minimum wages. Peter's position was unpopular, but he 'stuck to his guns.' Following an unsavoury debate, Peter decided to research less politically-charged topics.

Dr Phil Kokic, a statistician at the Australian Bureau of Agriculture and Resource Economics, gave a very interesting talk on linking climate variability with farm financial performance. Phil has developed a new economic model which may help policy makers and rural program managers better predict the impact on financial performance of climate variability and commodity price variation. The model, which is still work in progress, illustrates the difficulties of bringing together a wide variety of data from different sources. These data include biophysical panel data on pasture growth and wheat yields, cross-sectional farm survey data, and commodity price time series data.

Phil began by mentioning the types of users of climate information. These include national and government organisations, who have strategic goals with a view to the development of long-term rural investment and lending policies. Then there are regional bodies, such as Landcare groups, which are interested in medium-term programs and their outcomes. And finally there are individual farmers, whose need for climate information is operational, with their main concern being short-term crop and pasture management and business planning. The proposed model will ultimately be a benefit to all three types of users.

Phil's model broadly consists of two components (or modules), namely 'yield simulation' and 'price simulation', and draws on four main sources of data, these being biophysical data, agricultural census data, farm survey data (from an annual survey of 1500 farms), and commodity

price data. The model is linked to these data via modules from earlier work, these being 'phase forecasting', 'commodity price modelling', 'statistical linkage', and 'livestock yield index'. The output from the two components of the model is combined and used to simulate farm performance and production figures. These figures are then looped back into the model, and the final result used for policy analysis.

Phil discussed some of the problems which he encountered whilst searching for the best model, such as a shortage of data to work with after changing focus from SLA (Statistical Local Area) to regional level aggregation. In the end he was, with the aid of backward elimination, able to find a model with only a few variables and very good fit diagnostics, especially with regard to the prediction of wheat and livestock yield.

Mr Geoff Lee of the ABS gave the final talk for the evening. He described in broad terms the approach other national agencies are taking towards providing microdata. He outlined some broad driving factors influencing the path the ABS is taking and discussed new directions ABS is taking in providing information accessibility.

Geoff began his talk by discussing the various styles of microdata access, and the types of legislation which generally drive the policies of national agencies of public access to microdata. He talked about his recent tour of national agencies in Europe and North America, where, like in Australia, there continues to be a lot of discussion around the conflicting requirements of privacy and protection of individual and user access.

Geoff then went on to discuss the approach which the ABS is taking in microdata access. He explained that the Australian Legislation allows release of microdata but only "in a manner that is not likely to enable the identification of the particular person or organisation to which it relates". The ABS has in the past taken a strategy of risk avoidance – ie non-release of microdata. This strategy is now moving to one of risk management, through tools such as creating a 'safe' environment for data, user undertakings, sanctions and education. In the future, Confidentialised Unit Record Files (CURFs) will remain the main source of ABS data for researchers however there continue to be new developments in information access: through standard statistical outputs on the ABS web site, through collaboration projects with the ABS Statistical Analysis branch, through database linkage projects, and through the Remote Access Data Laboratory (RADL).

Geoff explained that Remote Access Data Lab (RADL) is a means for users to access more detailed information than is available on a CURF, requiring only internet access and using software provided within the system for analysis. Batch processing with a quick turnaround ensures users have access to the results of their analysis within minutes, while the ABS maintains the security of the data since the CURF remains in the ABS environment. User activity is monitored with restrictions on the nature of queries which can be processed through the RADL to ensure the risk of identification is minimised.

Geoff finished his discussion by commenting that the issue of microdata release is important and hopes that discussion and debate continue within SSAI. In that regard, he is happy to share his experiences and collaborate.

The evening concluded with a panel discussion and the audience was invited to come forward with questions and comments on the afternoon talks. The talks generated some lively and pertinent debate around several issues. These included different approaches to access according to different bureaucratic constraints on the various agencies collecting and releasing official data for policy research. They also included a discussion of the differences between data accessibility in Australia and the USA, and the potential for more extensive database linkages, especially involving the large and rich social science databases maintained by many universities. Another question related to training of statisticians to undertake policy related work, and yet another to the comparability across different generators of policy related research data. There were also several questions on the mechanisms which the Australian Bureau of Statistics and other agencies are offering for releasing microdata and their implications for researchers. The discussion could have continued for much longer than time permitted.

Borek Puza, Terry Neeman and Anna Poskitt

XXIInd International Biometric Conference *in parallel with* Australian Statistical Conference

IMPORTANT DATES

1 December 2003 – Abstract Submission Deadline

1 March 2004 – Earlybird Registration Closes

The exciting event is being held jointly by the International Biometric Society and the Statistical Society of Australia on **11-16 July 2004** at the **Cairns Convention Centre**, Queensland, Australia.

It is expected that the joint conference will attract over 700 delegates and include eminent international speakers, leading researchers and participants from both Australia and overseas. Delegates will be able to attend sessions of either conference, ensuring a rich and varied scientific program.

An array of social events and tours are also being planned, to take advantage of beautiful North Queensland.

For furthern information, to submit an abstract for presentation or to register for the conference, please visit www.ozaccom.com.au/cairns2004

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Disclaimer

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DEADLINE FOR NEXT ISSUE: 10 JANUARY 2004

Editorial

How would you like to receive your *Australian and New Zealand Journal of Statistics*? Paper or electronic? This important issue is currently under discussion by the Central Council of the Society, and a decision is expected in February 2004. If you do not tell your Council delegates what you would prefer, a decision will be made without your opinion being taken into account. A letter from several statisticians on this topic appeared in the August newsletter. There have been no other letters on this topic to date. What do you think? Drop us a line – it doesn't have to be long! The Editors welcome such debate on issues of importance to Society members.

A special feature of this newsletter is the colour pictures which we have been able to bring you. The photos you submit to the Newsletter do not have to be black-and-white, so whatever kind of pictures your camera takes, remember to take it to Society events, conferences etc and snap away.

This issue also contains several conference and workshop reports, as well as the usual Branch meeting reports. The Young Statisticians held a conference in Newcastle after a break of a couple of years, the Canberra Branch held a workshop on Data Availability and Brenton Clarke attended a conference in Poland. Joe Gani has also written a delightful feature on his life as a retired statistician. Is this your situation too? Write in and tell us about it! For many others of you, retirement will be many years in the future. Why not write about the delights of your current job? The Editors would love to hear from you!

Competition

The Editors were unsuccessful in obtaining more entries in the competition announced in the May 2003 issue, regarding the best-known statistician who ever lived. So in this issue we announce a new competition, involving many fewer words, which we hope will inspire.

The object is to come up with an adjective that is the most appropriate for a statistician (or biometrician or whatever). We're looking for something like a "nonplussed mathematician" or a "mean statistician".

The best entries will appear in the next issue of the Newsletter, so send your contributions to the Editors by 10 January 2004.

Thank you

SSAI would like to thank Covance Pty Ltd and the Australian Bureau of Statistics for their continued support of the Society's activities.

Web site of the month

The Australian Institute of Health and Welfare is Australia's national agency for health and welfare statistics and information. It traces its origins back to the School of Public Health and Tropical Medicine set up by the Commonwealth Department of Health at the University of Sydney in 1930. Society member H.O. Lancaster was a member of staff of this School in the 1940s and 50s.

In the present, the AIHW website offers links to many of its publications, and data cubes concerning cancer, cardiovascular disease, disability and other health matters. What's a data cube? Go to http://www.aihw.gov.au and find out!

Letter to the Editor

Dear Editors

I was disappointed to read the Society's Strategic Plan referred to "the apparent decline of statistics in CSIRO".

As a research organisation, CSIRO creates and needs to analyse data from many sources and statistics is a critical aspect of that. CSIRO Mathematical & Information Sciences (CMIS) is the Division that continues to be the major centre of statistical research in CSIRO. As such we work with industry and Government organisations both directly and with other researchers and other CSIRO Divisions with the aim of making a (substantial) difference. Our research, which focuses on various aspects of data analysis and modelling, delivers through three themes: Biotechnology & Health Informatics, Environmental Monitoring for Management and Decision Making for Industrial Processes & Business Services.

Some of our recent highlights in the environmental area include methodology for assessing and monitoring agricultural land in WA (http://www.cmis.csiro.au/rsm/research/index.htm) and developing a time series to monitor land cover change as part of the National Carbon Accounting Scheme (http://www.greenhouse.gov.au/ncas/activities/landcover.html) – critical for Australia's response to the Kyoto protocols. We also work closely with colleagues in CSIRO Marine Research and together we have recently developed an innovative approach to estimating the age distribution of Southern Bluefin Tuna. This has led to agreement internationally to collect far better data to manage in a sustainable way a resource which is critical for the Australian fishing industry.

It is true that we are doing less traditional biometric work. Better training of researchers and better software have reduced the demand for statistical innovation there and we aim to work where we will make the biggest impact. We have been moving over the last few years into bioinformatics and biostatistics and have been able to do some challenging work to develop products with several small, innovative Australian companies. See, http://www.cmis.csiro.au/BioTech/research.htm.

We continue to fund (six currently) and supervise postgraduate students (eight CMIS people are currently acting as supervisors) and post-docs and we run a vacation scholarship program for students who have finished 3rd year (we have supported 22 statistics students over the last 3 years.) We have also been a major sponsor of recent SSAI Conferences (most recently July 2002).

In summary, statistics remains active and of high importance in CSIRO. The examples above are a sample of the areas in which we work. We seek and welcome interactions and collaborations with statistical colleagues in business, industry and universities.

Yours sincerely
Murray Cameron
Chief of Division
CSIRO Mathematical &
Information Sciences

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To make sure you get the best deal, call the Member Advantage Insurance Services on **1300 365 152** or visit http://www.member-advantage.com/ssai

President's Corner

Science Meets Parliament

Early in October the Federation of Australian Scientific and Technical Societies (FASTS) held a two-day meeting in Canberra where 250 scientists from a broad range of disciplines met 150 parliamentarians. The first day was aimed at briefing scientists about how to interact with our parliamentarians and to meet each other and the second day was taken up with a series of meetings involving two or three scientists and one parliamentarian. Discussions with other scientists highlighted the plight of science at Australian universities and it would be no understatement to say that everyone was concerned about the pressures that are being felt and the impact that this is having. Consultants, such as myself, but in other disciplines are also very concerned about this situation and were in Canberra primarily to tackle the politicians on this topic. My groups met with Martin Ferguson (ALP, Melbourne) and Senator Len Harris (One Nation, Queensland) and it was strongly evident that our political representatives were very acutely aware of the situation regarding science in Australia. We did not have to spend any time convincing them about this aspect but talked more about the details of what each of us did. This served to underscore the main concerns because every one of us is affected in some way. One environmental consultant highlighted that the cost of professional indemnity insurance is increasing dramatically for scientists as well as for the medical profession.

I came away from Canberra with a much better idea of the strength and cohesiveness of the views held within the scientific professions and it is clear that Mathematics and Statistics are not the only disciplines under pressure. Also it was clear that the politicians were already aware of the situation regarding science in our universities and that we need to keep up the pressure for action.

Happy Anniversary

Congratulations to John Henstridge and the team at Data Analysis Australia who are celebrating their fifteenth anniversary. The business now employs ten people and is growing rapidly. In an environment where many businesses do not survive more than a year or two, it is a tribute to John's vision and persistence that the business is flourishing. It is also refreshing to realise that demand for good quality statistical expertise is as strong as ever and that it is possible to build a successful business using this expertise as a core element.

ANZJS Meetings

Arrangements are underway for a series of meetings where I will present details surrounding the question of whether the ANZJS should go electronic-only. This topic grows more and more fascinating as I find out more about it and I would like to share this information with members. The meetings will also provide a great opportunity for members to provide feedback about any of the detailed aspects and options. Currently, the proposed dates are (Canberra – 11th November, Melbourne – 18th November, Adelaide – 24th November, Perth – 25th November, Brisbane – 9th December and Sydney – TBA). Please do not take these dates as being definitive but check with your Branch for more details. I hope that you can come to one of these sessions.

Season's Greetings

Even though I expect to see many members at the meetings to discuss the Journal, I would like to take this opportunity to wish every one a happy festive season and express the hope that the New Year will herald a brighter future. Special thanks go to every one who has contributed to any of the many aspects of the Society's activities during 2003.

Neville Bartlett

Patching the holes

During WWII a research group charged with protecting bombers from anti-aircraft fire decided to put extra armour plating on the places found on returning aircraft to have the most bullet and flak-holes. Their statistician protested. "No," he said, "Let's put the extra shielding on the places where there are no bullet holes."

His logic was that, if the bombers had got back safely, then the places where they had been hit were clearly not vital. It's a case of how designers and planners can reach the wrong conclusion without a sound statistical approach.

Statistics: a job for professionals

www.statsoc.org.au/PublicAwareness

Australian and New Zealand Journal of Statistics

Highlights of the forthcoming December Issue 45(4) of the Australian and New Zealand Journal of Statistics

APPLICATIONS

- Monitoring for increases in process variance by *Ross Sparks*

THEORY & METHODS

- Ancestral inference in population genetics models with selection (with Discussion) by *Matthew Stephens & Peter Donnelly*
- Models with errors due to misreported measurements by *Brent Henderson & Richard Jarrett*
- A sparse implementation of the average information algorithm for factor analytic and reduced rank variance models by R*obin Thompson, Brian Cullis, Alison Smith & Arthur Gilmour*
- Non-parametric testing of conditional variance functions in time series by *Naâmane Laïb*
- A lack-of-fit test for heteroscedastic regression models via cosine-series smoothers by *Chin-Shang Li*
- Bayesian inference for a stochastic epidemic model with uncertain numbers of susceptibles of several types by *Yu Hayakawa, Philip D. O'Neill, Darren Upton & Paul S.F. Yip*

The first article in the December issue is an applications paper by Ross Sparks.

Process variation is made up of a wandering mean (signal) and the variation of the process around this wandering mean (noise). A new process monitoring methodology that uses various forms of moving variances is advocated by the paper for signaling changes in process noise or variance. These are compared to the current approaches in terms of their average run length properties.

The Theory and Methods section contains six articles including the Inaugural Editor's Invited Paper for 2002, which was presented by Peter Donnelly at last year's conference in Canberra. It includes a discussion by Terry Speed and Sue Wilson. Stephens and Donnelly give a new algorithm for exact simulation from the conditional distribution of the genealogical history of a sample, given the composition of the sample, for population genetics models with general diploid selection. The new method is applied to ancestral inference for the two allele case, both with genic selection and heterozygote advantage and disadvantage, where one of the alleles is assumed to have resulted from a unique mutation event.

There are many sources of error to contend with when modeling real data. We are used to considering the random error component that is an inherent part of any stochastic model. Measurement error and misclassification error are also frequently studied. Brent Henderson and Richard Jarrett (both from CSIRO) introduce another type of error which they call ``misreporting error''. Misreporting is concerned with situations where a continuous random variable X is measured with error and only reported as the discrete random variable Z. This occurs with data grouping or rounding. For example, where ages are recorded in decades, somebody aged 50 may be recorded as aged 40-49.

Henderson and Jarrett propose a mechanism for handling misreported data and making appropriate inferences in some simple models. As a motivating example, they consider data from a prenatal Downs Syndrome screen, where the gestational age at which mothers present for screening is a true continuous variable but is misreported because it is only ever observed as a discrete whole number of weeks which may in fact be in error.

Another interesting paper is *Nonparametric testing of conditional variance functions in time series* by Naâmane Laïb from University of Paris. Many statistical methods assume a constant conditional variance which is often too restrictive, especially for financial, economic and environmental time series. Laïb proposes a nonparametric test for conditional variance against a predefined conditional variance function. The test is designed for application to stationary and ergodic time series. The most common application would be to test against a constant conditional variance. One nice feature of Laïb's test is that, unlike many nonparametric tests, it does not require the use of a bandwidth.

Chris Lloyd
Rob Hyndman
Russell Millar

Competition

The Statistical Computing section of the Australian Statistical Society is co-sponsoring a student paper/software competition on the topic of **statistical computing; data mining; statistical graphics; and intelligent data analysis**.

Students are encouraged to submit papers in one of the above areas. Papers should be original and demonstrate some novel computing or graphical application in statistics, software or some interesting data analysis.

The selected winners will be invited to attend ASC 2004. The SSAI will pay registration fee for the winners. There will be other prizes sponsored by other organizations.

Anyone who is a full time student (undergraduate, postgraduate or PhD) is eligible to apply. Age limit is 35 years. Only students from Australia and New Zealand can take part in this competition. Students should submit an abstract, an eight-page(maximum) manuscript, a CV, and a letter from faculty member. All material must be in English.

All papers must be received by 5:00pm, 28th November, 2003, preferably by e-mail at the following address. The selection criterion will include innovations and significance of the contribution. Awards will be announced by 15 March, 2004.

Please address any enquiries to Dr Kuldeep Kumar at email kkumar@bond.edu.au. Address for enquiries and submission of paper

Student Paper Competition
C/o Associate Professor Kuldeep Kumar
School of Information Technology
Bond University
Gold Coast, Queensland 4229
AUSTRALIA

What is it like being a Retired Statistician?

A little while ago, Nick Fisher, then President of the SSAI, asked me to start a column in the SSAI Newsletter, to report on retired statisticians, their activities, their interests and their concerns. I have recently written to 3 retired colleagues asking them for possible contributions: although only one has responded so far, I remain optimistic that the other two will eventually reply. Perhaps, thought I, they are waiting for me to show that I am equally willing to write for this column. So here goes!

Joe Gani

I have now been retired since July 1994 from my last career position at the University of California, Santa Barbara. My interest in research remains undiminished, although I would be surprised if my acuteness had not declined somewhat. This has not prevented me from publishing, from 1995 on, over four dozen technical papers, general articles and a book, some written individually and others jointly with colleagues. I remain fascinated by the complexity of epidemic models, and by the patterns which emerge in sequences of random events. Sadly, I find that I am also writing an increasing number of obituaries for my contemporaries, among them friends such as Sid Yakowitz, Jo Moyal and Maurice Bartlett.

My daily routine begins with a drive to the ANU, which I reach by 9 am; car parking becomes difficult thereafter. I subdivide my day into three parts. The first is devoted to replying to E-mails, and dealing with administrative chores; these include organizing an occasional conference, acting on various Academy of Science and other committees, or writing references for ex-students and colleagues. I admit to an increasing concern about references; I am out of touch with some of the latest statistical developments, so that I cannot always do full justice to the achievements of those who ask me to act as a referee for them. I have decided that when I reach the ripe age of 80 in 2004, it will be time for me to decline, as graciously as possible, further requests for references.

My second set of duties is editorial: I am an Associate Editor of several journals, and Editor-in-Chief of The Mathematical Scientist, a small journal with a limited but devoted readership. I correspond frequently with authors and referees, and often help to rewrite material which is not adequately clear. I am also involved with Springer-Verlag, as one of the three editors of its series in Probability and its Applications; I review typescripts submitted for the series by authors, and advise on suitable referees. Further, as one of the Trustees of the Applied Probability Trust, I pay an annual visit to Sheffield in the UK, to review Trust developments over the previous year. I consider these duties to be my continuing contributions to the statistical community.

In the third part of my day, I attempt to concentrate on research. For example, I recently collaborated with my young colleague Linda Stals on a note about the spread of a viral infection in a plantation of trees. I am also trying to make some progress on other epidemic models, not always with success. All together, I appear to be constantly busy, which is probably a blessing in disguise, particularly since the death of my wife Ruth in January 1997. I am very fortunate to have highly supportive colleagues in the ANU Stochastic Analysis Group; helpful discussions with them on statistical methods, and their good humoured tolerance of my idiosyncrasies have greatly enriched my time as a Visiting Fellow at ANU.

Like everyone else, I have some general concerns. To dwell on the current sorry state of the world, or the poverty of imagination of our political scene would serve little purpose. But restricting myself to the statistical front, I must confess that I am disappointed by the relative dearth of PhD students in our discipline; I hope that this is only a temporary phenomenon. There are many interesting problems waiting to be solved in our field, so I hope that young mathematical and other graduates will be fired up by their challenge. I am also disturbed by the continuing trend towards economic rationalism in universities and research institutions; I fear that this is causing serious damage to their structure and to staff morale. I should like to see a government genuinely committed to education, scholarship and research for their own sake, not just for the economic benefits that they may generate. Scientific developments occur at random, many (but not all) eventually resulting in economic benefits; contrary to bureaucratic expectation, it is almost impossible to plan these in an organized fashion. My friends tell me that I am an incorrigible idealist, and perhaps they are right; but one can always hope!

My days are filled with a wide variety of activities, not all of them statistical: I also enjoy concerts, plays, entertaining friends, visiting family and watching my grandchildren grow. My overall conclusion after these past 9 years is that retirement is to be warmly recommended!

Joe Gani
Australian National University

SSAI Sections

Do you have a particular statistical interest area? SSAI Sections have been a long-standing feature of the Society. Their aims include:

- Provision of a forum through which members who are interested in a particular aspect of statistics, in academia, government and industry, can exchange views and ideas;
- Promotion of networking among members on topics of mutual professional interest;
- Organisation of ongoing professional development of interest to members and the wider community, through workshops, seminars or competitions;
- Contribution to the Society's biennial conference through nominating international speakers and organising sessions;
- Dissemination of information of interest to members, including national and international professional activities, relevant conferences, job opportunities,
- Development of links with related societies;
- Interaction across the profession, including links with related societies and encouragement of other statisticians and non-statisticians to join the Society, take part in activities and see themselves as part of the broader statistical community.

Of course, SSAI Sections are only as strong and active as its members. Why not get involved by joining a Section, participating in activities, and offering to host or advertise a seminar in your part of the world that might be of interest to others? The SSAI website will soon have pages for each Section. In the meantime, contact ssai@ozemail.com.au and ask to join the Section/s of your choice. Contact information for Section Chairs is listed on page 21 of this Newsletter.

Following is a brief summary of the various SSAI Sections and their current activities.

Surveys and Management Section

Chair: Robert Clark

This Section focuses on topics related to sampling and survey methodology and application, and the wider perspective of business management. The Section has organised one-day workshops at the last few Australian Statistics conferences. In the non-ASC years, half-day workshops have been organised, either in Wollongong or Canberra or both. The Section has strong ties with the Australian Bureau of Statistics and other government departments.

This year, the Section sponsored the Ken Foreman lecture on 14 October by Dr Ken Brewer and promoted a half-day workshop on longitudinal survey design and analysis and a half-day workshop on user issues for government statistics. These activities were joint with or run by Canberra Branch.

Industrial Statistics Section

Chair: Aloke Phatak

The Section organized sessions on industrial statistics at the 2002 ASC in Canberra; organized conferences on industrial statistics in non-ASC years 1995, 1997 and 1999 (the '99 one held in conjunction with the Young Statisticians conference). Occasional short courses or workshops have been organized under the auspices of the section, with the last one comprising a short course given by three overseas visitors on SPC/APC. The Section will be actively involved with ASC2004. Section members are involved in the Monte Carlo workshop to be held in Melbourne in November 2003, hosted by the ARC Centre of Excellence for Mathematics and Statistics of Complex Systems, which boasts a number of highly acclaimed international statisticians.

Bayesian Statistics Section

Chair: Kerrie Mengersen

This new Section aims to meet the growing interest in Bayesian methods by promoting the development of Bayesian methods and their application across a range of disciplines. The Section has organized a one-day workshop at ASC16 presented by Professor Robert Wolpert, Duke University and has promoted various short courses and seminars held across Australia. Of particular note is the active Bayesian Discussion Group and book reading associated with the Queensland Branch. ASC2004 will also see a Bayesian Statistics session organized by the Section.

Young Statisticians Section

Chair: Simon McGregor-Macdonald

Statisticians who are students or in the first few years of employment in the profession are invited to become members of the YoungStats section. (In fact, some oldies also creep (totter) in as well.) YoungStats holds activities in many states under Branch organization. Most recently, a national YoungStats conference was held in Newcastle, attended by approximately 50 people from across Australia and New Zealand, representing diverse universities and workplaces. YoungStats will also host get-togethers at ASC2004. You are welcome to join us!

Statistical Education Section

Chair: Darfiana Nur

The Statistical Education Section promotes good teaching practice at all levels of learning. In the past few years, one-day workshops have been held at Newcastle and Wollongong, resulting in a special edition of the Journal of Applied Mathematics and Decision Sciences in 2003. A Statistical Education stream was also organized by the Section for the 2002 Australian Mathematics Society Conference. The aim is to develop strong links with other active stats education groups in Australia and internationally, to inform members and encourage exchange of ideas.

Statistical Computing Section

Chair: Kuldeep Kumar

Statistical computing is an area of active interest to many members of the Society. Currently the Section is co-sponsoring a student paper/software competition on the topic of statistic computing, data mining, statistical graphics and intelligent data analysis. Details are available from kkumar@bond.edu.au. The closing date for the competition is 28th November 2003.

Biological Sciences Section

Chair: Simon Barry, Peter Howley

The Biological Sciences Section encompasses all interests relating to biological systems, including biology itself, environmental and ecological systems, and medical statistics including epidemiology and biostatistics. The Section aims to facilitate member networks with other national groups such as the Biostatistics Consortium of Australia, promote training opportunities and be a place holder to make it easier to organise, advertise and gain sponsorship for professional networking events. ASC2004 will see a variety of activities co-organised by Section members, particularly as the meeting is co-hosted by IBC.

Australian Foundation for Science

Founded by the Australian Academy of Science for the benefit of science in Australia

The AGM of the Australian Foundation for Science was held on Thursday 18 September, and Sue Wilson attended as the representative of the SSAI. Items of interest on the agenda included:

(i) Population and environment online conference

A report on the research currently being conducted in Australia on how the size, distribution, lifestyle and other characteristics of Australia's population are likely to affect the environment, as well as the positions held by the various disciplines and lobby groups, has been completed. This has formed the basis for an online conference on population and the environment currently being hosted by the Australian Academy of Science. Selected scholars from across the relevant specialist disciplines have been invited to respond to the report as the first stage in the conference. This includes SSAI member Ian Castles. The conference website is at www.conference.science.org.au.

The author of the report "Population and Environment in Australia: 2003", Dr Colin Butler, found that comparatively little sophisticated research exists on population and environment as a distinct subject. Instead, it seems that most work has traditionally been undertaken by specialists such as demographers and economists focussing on population issues with little regard for the environmental aspects of population growth or by environmentalists with little regard for economic and social realities. The aim of this conference is to encourage interaction between different disciplines looking at the real problem: Population AND Environment. The report, responses and related documents are available at the above website. If you wish to participate in the conference, you are invited to register online.

(ii) Nova: Science in the news

As of 31 August 2003 there were 74 topics available at www.science.org.au/nova. Topics currently under development include the safety of four-wheel drive vehicles, genomics, proteomics and phenomics and stem cells and two topics on climate change. In the 12-month period until June 2003 there were nearly two million page hits on the website (compared with ~1.4 million for the previous 12-month period).

Finally, a reorganisation of the Foundations' administration to reduce unnecessary complexity was approved at the meeting.

Sue Wilson

CSIRO Mathematical and Information Sciences – Awards 2003

Recently the CSIRO Division of Mathematical and Information Sciences (CMIS) recognised the work of a number of its SSAI member statisticians through a series of awards. The aims of the awards were to provide members of the Division with a formal opportunity to participate in the success of their colleagues and to share their achievements and learnings. The awards were recognised with celebrations at all CMIS locations throughout Australia and a monetary reward for each award recipient (individual or team).

The following Awards were received by SSAI members of CMIS:

Chief's Scientific Excellence Award – To recognise and encourage scientific excellence.

Geoff Laslett (Clayton, Vic) (www.cmis.csiro.au/Geoff.Laslett) for his work in developing methods for accurately predicting growth curves for stock assessment. (www.cmis.csiro.au/envir/Capabilities/FishManagement.htm)

Service from Science Awards - To encourage and recognise teams providing high levels of service

Remote Sensing and Image Integration Group (including SSAI member Jeremy Wallace, Perth, WA) - for their ability to build an ongoing relationship with external collaborators. (www.cmis.csiro.au/rsm)

Partnership Excellence Award - To generate the building of strategic alliances with other R&D providers external to CSIRO

Bronwyn Harch (Brisbane, Qld) for her work in developing an active network of scientific collaborators and utilising these contacts to initiate and maintain strategic engagement (www.cmis.csiro.au/Bronwyn.Harch/).

Bronwyn Harch

Abel Prize

The Norwegian Academy of Science and Letters is calling for nominations of candidates for the Abel Prize 2004. The prize amounts to NOK6 million (approximately 750,000€). It is an international prize for outstanding scientific work in the field of mathematics, including mathematical aspects of computer science, mathematical physics, probability, numerical analysis and scientific computing, statistics, and also applications of mathematics in the sciences. Nominations close 15 November 2003.

Further information can be found at: http://www.abelprisen.no

The next

Australian Statistical Conference

is in

Cairns 11–16 July 2004

in parallel with the next

International Biometrics Conference IBC2004

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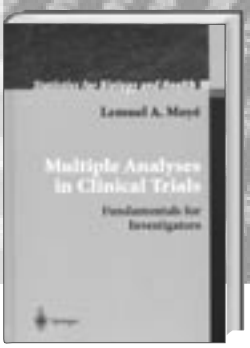

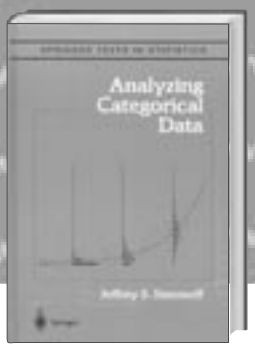

J. E. Gentle *2nd Edition*

Random Number Generation and Monte Carlo Methods

Covered are basic principles, as well as newer methods. The emphasis is on practical methods that work well in current computing environments.
Exercises are included and can be used as a test or supplementary text for various courses in modern statistics.

2nd ed. 2003. XV, 381 p. 54 illus. (Statistics and Computing)
Hardcover **€ 79,95**; sFr 133,00; £ 61,50
ISBN 0-387-00178-6

C. F. Manski

Partial Identification of Probability Distributions

Yet there is enormous scope for fruitful inference using data and assumptions that partially identify population parameters. This book explains why and shows how. It presents in a rigorous and thorough manner the main elements of Charles Manski's research on partial identification of probability distributions. One focus is prediction with missing outcome or covariate data. Another is decomposition of finite mixtures, with application to the analysis of contaminated sampling and ecological inference. A third major focus is the analysis of treatment response. Whatever the particular subject under study, the presentation follows a common path.

2003. XII, 178 p. (Springer Series in Statistics)
Hardcover **€ 79,95**; sFr 133,00; £ 61,50
ISBN 0-387-00454-8

L. A. Moyé

Multiple Analyses in Clinical Trials

Fundamentals for Investigators

An essentially nonmathematical discussion of the problems posed by the execution of multiple analyses in clinical trials. The book concentrates on the rationale for the analyses, the difficulties posed by their interpretation, easily understood solutions, and useful problem sets. It will help clinical investigators understand multiple analysis procedures and the key issues when designing their own work or reviewing the research of others.

2003. XXIII, 436 p. 33 illus. (Statistics for Biology and Health) Hardcover **€ 89,95**; sFr 149,50; £ 69,00
ISBN 0-387-00727-X

T. J. Santner, B. J. Williams, W. I. Notz

The Design and Analysis of Computer Experiments

This book describes methods for designing and analyzing experiments conducted using computer code in lieu of a physical experiment. It discusses how to select the values of the factors at which to run the code (the design of the computer experiment) in light of the research objectives of the experimenter. It also provides techniques for analyzing the resulting data so as to achieve these research goals.

2003. XII, 283 p. (Springer Series in Statistics)
Hardcover **€ 79,95**; sFr 133,00; £ 61,50
ISBN 0-387-95420-1

J. S. Simonoff

Analyzing Categorical Data

The coverage of this introduction is broad, using the loglinear Poisson regression model and logistic binomial regression models as the primary engines for methodology. All methods are illustrated with analyses of real data examples, many from recent subject area journal articles. More than 200 exercises are provided, many also based on recent subject area literature. Data sets and computer code are available at a web site devoted to the text.

2003. XV, 496 p. 64 illus. (Springer Texts in Statistics)
Hardcover **€ 84,95**; sFr 141,00; £ 65,50
ISBN 0-387-00749-0

J. Shao *2nd Edition*

Mathematical Statistics

This graduate textbook covers topics in statistical theory essential for graduate students preparing for work on a Ph.D. degree in statistics. A large number of exercises in each chapter provide not only practice problems for students, but also many additional results.
In addition to improving the presentation, the new edition makes Chapter 1 a self-contained chapter for probability theory with emphasis in statistics. A new section in Chapter 5 introduces semiparametric models, and a number of new exercises were added to each chapter.

2nd ed. 2003. XVI, 591 p. (Springer Texts in Statistics)
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AN UPDATE ON ACCREDITATION

1. Accreditation

Accreditation was introduced by the Society in 1998 to identify those practitioners of statistics who are judged by their peers to offer a professional standard of expertise. There are two levels of accreditation available:

- Accredited Statistician (AStat), for experienced professional statisticians
- Graduate Statistician (GStat) for recent university graduates who have attained the educational requirements for AStat, but require practical experience before qualifying as AStat.

Accreditation brings benefits to the users of statistics who can be sure that they are receiving professional advice and also to accredited statisticians who have a means of demonstrating their professional status.

The focus of accreditation is on the professional application of statistical methods. The assessment process looks at formal qualifications as a baseline, but full accreditation requires evidence of a strong understanding of the issues involved in applying statistical methods in practice. Since 1998, 181 members have applied for AStat status and 155 (86%) have been accepted. The major reason for non-acceptance is a lack of demonstrated experience. The usual requirement is publications or written reports demonstrating practical competence rather than theoretical or mathematical ability.

There are currently 154 accredited statisticians of whom 105 have entries on the SSAI web site at http://www.statsoc.org.au/accredited.html. There are also 49 graduate statisticians, 17 on the web site.

2. Accreditation of courses

Over the past year, the Accreditation Committee has been examining the potential for accrediting university statistical courses in order to streamline the process of accrediting Graduate Statisticians. After discussion with members at universities and more broadly, a proposal has been developed which has been sent to Council for approval. Under the proposed process of accreditation, a university may apply to the Council to have a specified degree program accredited by the Society.

The application must demonstrate that the statistical content of the course is sufficiently broad and deep to provide a sound basis for a graduate's ongoing professional development.

Accreditation will allow universities to publicise accredited courses as qualifying their graduates as Graduate Statisticians.

3. Reaccreditation

The process of reaccreditation has commenced for the first time. The first AStats were awarded in 1998, so that the five year terms have come to an end this year. Reaccreditation forms have recently been sent to those who were accredited in 1998.

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

4. Thanks to past members

Several members of the Accreditation Committee have recently completed their terms. Our thanks are due to Prof Annette Dobson, Dr Siu-Ming Tam and particularly to Dr Richard Jarrett for his leadership as Chair of the Accreditation Committee since 2001.

Ian Saunders, Chair,
Accreditation Committee.

Young Statisticians Conference Photos

Simon McGregor-Macdonald welcomes everybody to the conference.

A happy table at the conference dinner.

A bit of a queue at the bar during the cocktail party.

Everybody enjoys morning tea outside on the balcony.

Everybody getting involved in the poster session.

Ross Sparks from CSIRO discusses privacy and security concerns being faced.

NEW SOUTH WALES

July Meeting

Dr Colin Priest of Sigma Plus Consulting addressed the NSW branch of SSAI at the UWS Campbelltown Campus on the topic "Non-Standard Time Series Analysis". This meeting was well attended.

His talk was based neither on the usual Box-Jenkins type approach nor other approaches for time series data analysis. His attempt was to create a simulation model for data and then to obtain possible forecasts and their confidence intervals (CI). His justification for this approach is the complexity of multiple data series in practice. For example, there may be a very large correlation matrix to handle and/or too many parameters to consider in many real world problems. Using computer simulations, he showed some successful forecasts and CI's using this non-standard approach. He also considered some non-stationary, non-linear and seasonal type situations to justify his argument.

His talk and approach were very interesting, but it is difficult to see whether one can use it in a general situation with correlated data.

Shelton Peiris

August Meeting

Steve Davies spoke to us in August about the role of the Australian Prudential Regulatory Authority (APRA) – what it does and why it takes thirty-five people in the APRA Statistics Unit and hundreds of financial institution staff from around the country to come up with an estimate of $1.6 trillion at risk.

Steve very quickly informed us that the $1.6 trillion mentioned in his abstract was our money that is currently invested in a variety of banks (50), building societies (20), credit unions (200), insurance policies (230) and most importantly in superannuation schemes (11,500) and that we should all be very thankful that APRA is looking out for us.

APRA has been put in place to ensure that 'risks inherent in the business of financial intermediation are managed and losses covered so financial institutions can meet their promise'. Their regulatory activities include policy setting, supervision and monitoring via on-site inspection and more commonly off-site financial analysis.

The role of the Statistics Unit is to collect, manage, analyse and disseminate this information about the regulated institutions – you guessed it:

- Effectively
- Efficiently
- Squeezing out as much value as possible
- And then some more!

They present reports monthly, quarterly, half yearly and annually from 15,000 raw variables and 12,000 financial institutions. As always the information needs to be:

- Timely
- Accurate
- Relevant
- Comprehensive
- Consistent
- Accessible
- Clear.

Steve originally joined APRA as a statistical consultant to help them integrate and improve the organisation's disparate staff and systems. He must have impressed as he is now full time manager of the Unit and has a number of improvement activities completed or on the boil. These include enforcement – data must be made available to APRA, collections review and the system for review – the number and type of variables, electronic lodgement and validation. Steve left us with the most important issue at present being the one on everyone's lips – data privacy and how much data should be available to APRA and possibly to other organisations or interested parties. Hand-in-hand with this is the level of detail of the data.

Steve's talk was followed by animated discussion over a hearty Greek dinner at our usual Sydney city venue.

Caro Badcock

October Meeting

Robert Kohn of the University of NSW spoke on a general approach for dealing with multivariate regression models when the marginal distributions may be Gaussian or non-Gaussian. This involves transforming discrete marginals (for example) to Gaussian by introducing suitable latent variables (compare the probit transform). The dependence structure between the marginals is modeled through a Gaussian copula. The approach he takes is Bayesian and the computations are carried out using Markov chain simulation. He illustrated the methodology using simulated examples and real examples from finance (a model with t-distributed marginals) and health economics (over-dispersed Poisson), as well as the "wheeze data".

Alun Pope

VICTORIA

Young Statisticians in Victoria

After a time of hibernation, The Young Statisticians in Victoria have been resurrected! And we rejoiced the event with wine and cheese (like all good statisticians do).

The Wine and Cheese evening was held on Thursday 10th July at 6:30pm. We had the honour of having Dr Ann Solterbeck, the Director of Statistical Revelations, to speak to us about her career path of becoming a "pseudo-statistician" (as she calls herself) and the role of statisticians in the pharmaceutical industries. To many of us, it was an eye-opener as it is usually a cloud to know what statisticians do "out there", especially in the pharmaceutical areas where we don't have much exposure.

So, here we are, The Young Statisticians in Melbourne, VIC, has kicked off with lots of wine/beer and cheese and at least 15 supporters. We are endeavouring to provide peer support to our fellow Young Statisticians.

Personal impressions of the Young Statisticians Conference

I have returned from the two-day Young Statisticians Conference at Newcastle (26-27 September 2003), and I had a fantastic time! The weather was beautiful, not to mention the beach, and dolphin watching! All you Young Statisticians should have been there.

On the technical side, the talks ranged from time series models for Australian dollars to Bayesian mixtures models applied to CAT scans on sheep. The invited talks included training robot soccer teams (and we actually watched a video clip of how it's done in action!), biostatistics and drug development, the methodology "Six-Sigma" and its prospect in industries, and the concern of confidentiality when dealing with integrated data sets. It was a fruitful event.

I took the opportunity to exchange my experience of being a Young Statistician with others from all over Australia and New Zealand. Many Young Statisticians there were also new to the affiliation. Although we are all dispersed in different cities, we all voiced the same needs as we are stepping into the profession as statisticians, especially in peer and mentor support.

One of the sessions unique to this conference was a "Discussion on

Networking, Professional Development". Some of the suggestions brought out during this discussion included setting up a mentoring scheme and a discussion forum on the internet, short courses, theme specific symposia and perhaps a more regular occurrence of the Young Statisticians conference and/or sessions for the Young Statisticians at the Australian Statistical Conference. It would be good to see some of this carried out into action.

Te-Chieh (Derchieh) Hung
Statistical Consulting Centre
University of Melbourne

Towards a more humane intracerebral pathogenicity index

Albert Trajstman, of the Applied Bioinformatics Group in CSIRO Mathematical and Information Sciences, was the speaker at the July meeting of the Victorian Branch. He explained that he had become involved in research in the area of Animal Ethics by accident, or serendipitously, as the result of an administrative reorganization in the CSIRO.

His talk described one of his early ventures into Animal Ethics. Newcastle Disease Virus (NDV) attacks birds, causing them distress involving (at least) internal bleeding, respiratory difficulty and loss of control of neck and wing muscles. It is of commercial interest because it causes devastating stock losses in poultry farming, but it also affects wild birds. There is a range of subtypes of the NDV, some more virulent than others. The standard procedure for assessing the virulence of a particular strain is to inject a dilute solution of the virus directly into the brains of ten 20-to-40 hour old chicks, observe them for 8 days and determine the intracerebral pathogenicity index (ICPI) as the mean 'score' per bird, calculated in the following way. The birds are observed each 24 hours, and scored 0 if they remain healthy, 1 if they show signs of NDV-caused illness, 2 if they are dead. Birds continue to score 2 each day after they die, up to the eighth day. Virulent viruses record an ICPI near 2 (most birds die early) and slow-acting ones score close to zero (most birds are healthy or only ill after 8 days).

Albert was able to improve the efficiency of estimation of the ICPI by modelling the disease process as a Markov Chain and estimating its parameters (previous CSIRO efforts involving multinomial modelling having met with little success). But he was disgusted by the ICPI procedure, because he regarded the requirement of forcing the birds, once sick, to suffer until they died, or until the eighth day, as inhumane. He said that one of a statistician's ethical goals for experiments involving animals should be to ensure that experiments avoid the unnecessary use of animals and yet make sure that they have statistical validity and precision. He suggested a modification of the experimental protocol in line with this goal. It would be desirable to 'euthanase' the chicks (the eventual fate of those surviving 8 days) after the first day they were observed to be sick, to minimize their suffering. The statistical problem was what score between 1 and 2 to award the bird for any days remaining of the 8. He showed how to make an optimal choice of this score, so that the expected value of the ICPI was unchanged from that obtained using the standard procedure, with the added bonus that its variance was at most as large as with the standard procedure.

He alerted us to the existence of many organizations devoted to the 'three Rs' of humane animal experimentation – replacement (of sentient animals with insentient material), reduction (of the numbers of animals used to obtain information of required precision) and refinement (decreasing the incidence or severity of inhumane procedures applied to those animals that still have to be used). Albert's modification of the ICPI experiment is an example of refinement.

John Taffe

Constrained Inference in Statistical Practice

The Victorian Branch was fortunate to secure Professor P.K. Sen of the University of North Carolina, Chapel Hill, as the speaker for the August meeting. A search of the ISI Web of Science for Professor Sen's work reveals an astonishing array of papers authored or co-authored by him. It would be an interesting exercise to try to discover if there is some major area of theoretical statistics to which Professor Sen has not made a contribution. But he is not just an eminent theoretical statistician. He has also undertaken a considerable amount of applied work, notable recent contributions being in the areas of clinical trials, medical studies, environmental risk assessment and toxicology.

Professor P.K. Sen

Professor Sen was on a flying visit to Melbourne to draft more chapters of a monograph he is writing with Mervyn Silvapulle of La Trobe University. The topic of their book is Constrained Statistical Inference. Strain lines on the authors' faces suggest that they already have a publisher and a constrained timeframe for the books' completion – it is a case of 'life meets book title'. Professor Sen's brief was to explain to the audience what constrained statistical inference means, and why it is of importance to general statistical practitioners.

Professor Sen argued that statistics has grown out of the need for modelling and analysis in various interdisciplinary fields. Unlike many text-book training examples, real-life statistical models are not simple, and are subject to complex constraints. Professor Sen drew on some of his medical and toxicological experience to underline this point. Unfortunately, there is no optimal decision theoretic framework for constrained inference, and many impasses. A considerable amount of effort has been spent on developing applicable methodology to deal with such constrained statistical inference in simplistic situations, in the hope that this would pave the way for more complex models arising in modern applications. Professor Sen described some of these advances and challenges.

The speaker peppered his talk with occasional apprehensive remarks about the impact of 'statistical learning', his term for data mining and related technologies. Nurtured by the advent of information technology, it threatens to steal the limelight, depriving statistical methodology of its due impact. Professor Sen's general thesis was that the best defence against this threat is to develop realistic statistical models, and analyse them appropriately using constrained statistical inference.

Geoff Laslett

QUEENSLAND

August Meeting

On Tuesday 5th, Professor Kim-Anh Do, M.D. Anderson Cancer Research Center, Houston, Texas, spoke to about 20 members and guests on "A Bayesian Mixture Model for Differential Gene Expression".

Having studied and worked at the University of Queensland and the Queensland Institute of Medical Research, Dr. Do is well known to Queensland statisticians. After receiving her Ph.D. from Stanford University in 1990, Kim-Anh Do worked as a researcher and faculty at the Australian National University and the University of Canberra, UQ and QIMR. In 1999, she joined the University of Texas M. D. Anderson Cancer Center as a tenured Associate Professor in Biostatistics.

Kim described joint work with Peter Mueller and Feng Tang on model-based inference they have proposed for differential gene expression. She outlined a non-parametric Bayesian probability model for the distribution of gene intensities under different conditions where the probability model is essentially a mixture of normals. The model, which is a variation of traditional Dirichlet process (DP) mixture models, includes an additional mixture corresponding to the assumption that transcription levels arise as a mixture over non-differentially and differentially expressed genes.

Inference proceeds as in DP mixture models, with an additional set of latent indicators to resolve this additional mixture. The use of fully model-based inference mitigates some of the necessary limitations of the empirical Bayes method (Efron, JASA 2001). However, the increased generality of this method comes at a price. Computation is not as straight forward as in the empirical Bayes scheme. The method was illustrated in two examples, including a simulation study and a microarray experiment to screen for genes with differential expression in colon cancer versus normal tissue.

Following the meeting, a small group of members and guests joined the speaker at the Sun Fay Chinese Restaurant, Taringa.

More details of the statistical methodology and software BayesMix developed to carry out the analysis is available at http://odin.mdacc.tmc.edu/~kim/

Peter Baker

September Meeting

James McBroom, a lecturer at Griffith University and a PhD student at Oxford University presented some of his thesis research in a talk to the Queensland Branch September meeting held at the Queensland University of Technology. The title of his talk was "Estimation in Generalized Linear Mixed Effects Models" (GLMMs).

James started by reminding his audience of the analytically intractable solution generated by high dimensional integrals that can arise in complex data sets. James presented a review of various estimation methods for GLMMs including

- Bayesian methods
- Maximum likelihood estimation and
- Penalized Quasi-likelihood

demonstrating the way in which these techniques attempt a solution.

James progressed through these alternatives by firstly presenting a quick outline of the MCMC techniques of Gibbs sampling and Metropolis-Hastings sampling and a hybrid of these two developed by Gamerman in 1997.

When the number of random effects per unit is small, it is possible to integrate over the random effects using quadrature methods such as Gaussian quadrature and Gauss-Hermite quadrature. These methods are similar to fitting a finite mixture with known mixing distributions.

James then illustrated another numerical solution to maximising the likelihood by discussing the process of the quasi-Newton Broyden-Fletcher-Goldfarb-Shanno (BFGS) optimization formula.

As the third and final approach, James reviewed the semi-parametric penalized penalized quasi-likelihood (PQL) method detailing how this is implemented by iteratively fitting a linear mixed model incorporating a variance-mean relationship.

Once the theoretical framework was constructed, James used some datasets to illustrate the various approaches. The first data represented the presence/absence of a specified bacteria in 50 infants, at treatment with an anti-bacterial drug or placebo and then at 2, 4, 6 and 11 week followups. James fitted a logistic random intercept model, estimating effects using PQL and Gaussian-Hermite (GH) quadrature using both 9 and 20 point quadrature. For this situation, James showed that little benefit was gained by the higher quadrature resolution. The PQL estimates for the fixed effects and their standard errors were slightly larger than that using the GH technique.

All three approaches produced very similar results for James' next dataset which was a (half-)logistic model fitted to aural testing data defined as a binomial response measuring aural revelopment during early childhood in which subjects were tested at 7, 18, 30 and 60 months of age.

In conclusion James presented several comments on these methods –

- A known problem for PQL is asymptotic bias in estimates, standard errors, and random effects (co)variance.
- Especially true for binary data in small clusters and with Poisson with small expected values.
- PQL improves as conditional distribution of the response given the random effects gets closer to normal.
- Bias corrections exist for PQL (Breslow and Lin 1995).
- Maximum likelihood is possible when low dimensional random effects or increased computational power available.

Ross Darnell

A thorough report of the successful R workshop and Queensland Branch conference held at the University of Southern Queensland during October will appear in the next newsletter.

WESTERN AUSTRALIA

Christopher Milne from Data Analysis Australia receives his GStat accreditation certificate from Martin Hazelton, WA Branch President, at the July 2003 meeting.

September Meeting

Dr Ritu Gupta of the Department of Mathematics and Statistics at Curtin University described some of her recent research on computer experiments. In a seminar entitled "Modelling Deterministic Experiments", she outlined traditional and not-so-traditional methods that could be used to come up with empirical models that provide simple yet interpretable approximations to complex computer simulations of petrophysical systems.

In the petroleum industry, complex and computationally intensive physical models are used to simulate reservoirs and then to predict economically important quantities such as ultimate recovery (UR). A single run may take a day or more, so simple approximations – or surrogate models as they are known – that accurately mimic the physical models and that provide information about which variables are important save both time and money.

Both kriging and response surfaces have been used successfully to construct surrogate models, and Ritu described the advantages and disadvantages of each method. She also outlined the development of an extension which combines both elements, the kriging type response surface method (KTRSM). In KTRSM, an adjustment factor is introduced for each prediction point based on its position in the design space. In contrast to kriging, response surface methods are easy to interpret (and explain to engineers!) and they also provide information about interactions.

Ellen Bandarian of Edith Cowan University receives the 2003 SSAI Honours Scholarship Prize from Martin Hazelton at the July 2003 meeting.

In any strategy for developing surrogate models, experimental designs that adequately cover the design space and minimize the number of runs are essential. They include the familiar – fractional factorial designs modified to include centre and axial points – and the not-so-familiar – Latin hypercube designs and symmetrical Latin hypercube designs.

In devising an efficient experimental strategy, Ritu pointed out that it is essential to consult with the petroleum engineers to decide which main effects and interactions might be important. She described a real problem involving a complex reservoir simulator, and showed the results of using different methods and designs. In many instances, KTRSM constructed using modified fractional factorial designs outperformed other methods.

After some interesting questions from the audience at the end of Ritu's talk, the discussion continued in the more informal confines of a local Nedlands restaurant.

Aloke Phatak

SOUTH AUSTRALIA

Running on Improbability Drive: Biochemistry, Futile Cycles and Markov Chains.

Mike Jones, a Specialist Anaesthetist of the Repatriation General Hospital and example of a true multi-disciplinarian has a degree in Mathematics, a PhD in Mathematical Biology and a Grad Dip in Applied Statistics. He addressed South Australian Branch earlier this year. Sections of the audience were intrigued by part of the talk's title and Mike acknowledged "Running on Improbability Drive" was from the Hitchhikers Guide to the Galaxy.

As a first approximation the inside of many animal cells is assumed to be a uniform well mixed compartment. From a probabilist's point of view this equates to the assumption that a Markov chain can model the fate of many substances within the cell. A brief biochemistry lesson provided an overview of part of the glycolytic cycle and how radiotracers can be used to track the metabolic movements in cultured liver cells. A random walk analysis was used to show that common assumptions about the control of cellular metabolism must be wrong. The results from radio-tracer experiments on the metabolism of glucose to lactate showed it was bi-directional with four intermediary phases occurring concurrently. This raised the question of whether these metabolic processes occur in different parts of the cytoplasm? It appears the cell is far more organized than previously supposed. From there a new hypothesis of "On average how many ATP requiring transitions are made to convert glucose to lactate" was generated. A simulated random walk model was shown for this model measuring the net flux and that of the intermediate steps. The enzymes used in the process can be viewed as probability brokers. When the cell wants to correct the breakdown of glucose to lactate more ATP is used than in general.

Mike finished the talk on a philosophical note that nothing in human mathematics is redundant; one never knows when you need to draw on your background.

Methodology in meta-analysis: study of intensive care meta-analytic practice

John Moran, a full-time clinician at the Queen Elizabeth Hospital, spoke to the July Branch meeting. The methodological aspects of meta-analytic practice, heterogeneity, publication bias, meta-regression and effect metric, were investigated in 14 meta-analyses reflecting major therapeutic concern in intensive care practice. The sample while not exhaustive was nevertheless adequate.

Heterogeneity appeared under-diagnosed using the standard Q test, compared with exact Zelen test. Publication bias was subject to test and metric determination: funnel plots, exhibited variable asymmetry across studies and between metrics. The regression asymmetry test appeared more sensitive than the rank correlation test. The "trim and fill" method was the most sensitive but suggested, on the basis of quantification of the effects of potentially missing studies, that meta-analyses may be resistant to such missingness.

Metaregression of treatment effect against control risk using Bayesian hierarchical regression in all metrics (log odds ratio, log risk ratio and risk difference) suggested that naïve linear regression approaches over-diagnosed significant relationships and exhibited regression dilution.

Heterogeneity, publication bias and risk related treatment effects all demonstrate estimator and metric dependence. The risk difference metric would appear the most capricious in this regard.

How much information do we lose with interval censoring?

Dr Gillian Raab, Professor at Napier University (Edinburgh, Scotland) in the School of Community Health, a visitor to the University of Adelaide addressed the September meeting.

In the generation of survival data, often inspection is necessary to identify whether an event has occurred. Parametric models such as the log normal and Weibull can be fitted to these problems. An example of this work was a study of wound healing times. A schedule of visits had to be planned to check if a wound had healed such as after radiotherapy. The resulting data can then be analysed by methods for interval-censored data. It was assumed that information would be lost as the survival time was not exactly known. Researchers made measurements weekly but the patient made daily assessments. It was intuitively thought that information loss would be greater for the longer intervals when based on the researchers weekly measurements. Unfortunately most of the literature using these approaches stemmed from product testing and the time to failure where the practical constraints were quite different to these circumstances. Surprisingly better efficiencies are achieved if the interval was increased, as you need a distribution that is not too wide so you don't miss the first interval if it appears too soon - but will be captured if in the second interval. Results presented quantified the loss of information was much less than anticipated and that in some circumstances the information will actually increase when the follow-up interval is lengthened. The cost effectiveness was shown to be proportional to number of visits, therefore was most effective if visit length is greater than the median except for those with small coefficients of variation.

Margaret Swincer

CANBERRA

The experiences of three young statisticians

At the monthly meeting of the Canberra Branch of the Statistical Society of Australia on 26 August 2003, three young statisticians shared their work and study experiences over the last few years.

Ben Phillips (NATSEM)

Ben Phillips graduated with a degree in econometrics at the University of Queensland in 1996. He then spent four years at the Australian Bureau of Statistics, mainly in the Analysis Branch of the Methodology Division. Whilst there he worked on projects involving the CPI, shopping centre scanning data, and the national accounts. After that he briefly worked for the Bureau of Tourism Research, where he helped forecast Australian tourism numbers.

In 2001 Ben joined the National Centre for Social and Economic Modelling (NATSEM) and has worked there ever since. NATSEM is formally a part of the University of Canberra but is mainly self-funded, with clients which include the Treasury, the Department of Family and Community Services, the Smith Family and various business organisations.

One of the main areas of research at NATSEM is wealth and poverty in Australia, and Ben has been involved in producing a number of statistics in that field. For example, the wealthiest 5% of Australians own about 30% of Australia's wealth, whereas the poorest 50% own only about 7%.

Another project which Ben has been involved with is STINMOD. This is a static microsimulation model of Australia's taxation and social security system which was developed in the mid 1980's and is being used by the Federal Government to assist in the making of policies. Ben has also helped to develop a microsimulation model of the Pharmaceutical Benefits Scheme, using data from the National Health Survey.

Anne Gardner (RCNP)

Anne Gardner is a registered nurse who works at the Research Centre for Nursing Practice, which is affiliated with both Canberra Hospital and the University of Canberra. She did a degree in sociology at the ANU some time ago and later went on to complete an MPH and recently a PhD with the National Centre for Epidemiology and Population Health (NCEPH).

Anne's PhD thesis was to assess the hypothesis that the factors which predict mortality in medical patients are the same as the ones which predict continued illness. To address this issue she conducted a prospective longitudinal survey of 628 adults aged 16-98 over three years. She collected data on several variables such as "multi-organ system failure" (Y or N), "severity of underlying illness" (3 categories), and "appropriateness of antibiotic" (Y or N). She then used logistic regression to predict the probabilities of three states, these being "death", "continued illness" and "recovery".

After some exploratory data analysis and testing of assumptions, Anne decided to perform two separate ordinary binary regressions rather than a single ordinal logistic regression. Based on her results, Anne's conclusion was to reject the study hypothesis. The study also identified considerable, previously undocumented, morbidity in survivors and indicated that further research is required to identify exactly what new interventions are required to improve health status for survivors of these serious infections.

Anne has also been involved with a randomised controlled trial to investigate the efficacy of heparin and hydrocortisone additive (HEPHC) to extend the life of peripheral cannulae in children. Based on a Kaplan-Meier analysis, the conclusions of this study were that there is no difference in survival times between children who are given HEPHC and those who are not. This indicates that the use of these drugs, which have negative side effects, should be discontinued.

Brent Henderson (CSIRO)

Brent Henderson completed his undergraduate studies and MSc at the University of Otago in Dunedin, New Zealand. After that he did a PhD in Statistics at the University of Adelaide where he then continued for another 18 months lecturing, consulting and doing research. In 1999 he joined the CSIRO and has been employed there ever since.

Brent works in the EMA (Environmental Measurement and Assessment) Program which consists of about 27 people, almost all of whom are statisticians. This Program is a part of CMIS (CSIRO Mathematical and Information Sciences), which has about 250 people and is one of the 19 Divisions which make up the CSIRO (whose total number of staff is currently around 6300).

The work done at EMA is a balance between research, collaboration and consulting, with earnings targets dictating the mix. Traditionally, a lot of work has derived from the application areas within CSIRO, but there is a greater external focus nowadays. Some of Brent's recent projects have been partnered with the Queensland Department of Natural Resources and Mines, South East Queensland Water, the NSW Department

Continued

of Land and Water Conservation, Land and Water Australia, and the Murray Darling Basin Commission. Brent typically works alone or in small teams of two or three with these partners.

A large component of Brent's work is the development of statistical modelling approaches for the monitoring, forecasting and regulation of water quality. This work is challenging because water quality data is subject to many complications such as high variability, missing values, censoring, positive skewness, seasonality, correlation over space and time, and potential confounding with other covariates (e.g. flow). Several of Brent's recent projects have involved analysing trends in key water quality variables such as salinity, turbidity and nutrients.

Another project is establishing associations between macroinvertebrate abundance and environmental variables. This project has involved evaluating a methodology related to Mantel's correlation test for linking measurements on 750 environmental variables and 40 species at 30 different sites.

One project which Brent may be working on in the future has to do with monitoring frogs via automatic sound detectors. Hopefully it will be possible to classify the recorded sounds into numbers and species of frog and then use the resulting data as indicators of ecosystem health.

Borek Puza

Australasian Conferences

Australasian Region of the Biometric Society Conference

3 – 5 December 2003 — Australian National University, Canberra
The conference will be in conjuction with the Australian Mathematical Sciences Institute "Summer Symposium in Bioinformatics".
Contact: Simon Barry, simon.barry@brs.gov.au

Summer Symposium in Bioinformatics

4 – 5 December 2003 — Australian National University, Canberra
Details: www.maths.anu.edu.au/events/BioInfoSummer

First New Zealand Time Series Study Group Workshop 2003

4-5 December 2003, Christchurch, New Zealand.
Information is available from: dominic.lee@canturbury.ac.nz

Workshop on Contaminants and Ecological Risk Assessment

5 – 7 April 2004 — Adelaide – Details: www.clw.csiro.au/conferences/contaminants

24th International Symposium on Forecasting

4 – 7 July 2004 — Sydney – Info at: http://www.isf2004.org

Econometrics Society Australasian Meetings

7 – 9 July 2004 — Melbourne – Info at: http://www.monash.edu.au/oce/ESAM04/

Australian Statistical Conference

11 – 16 July 2004 — Cairns, Queensland
Contact: Neville Bartlett, neville@nrbartlett.com.au

International Biometric Conference

11 – 16 July 2004 — Cairns, Queensland
Contact: Kaye Basford, k.e.basford@mailbox.uq.edu.au

Overseas Conferences

TIES 2004 – The International Environmentics Society and ACCURACY 2004: 6th International Symposium on Spatial Accuracy Assessment.

28 June – 1 July 2004, Portland, Maine, USA.
Info at: http://www.ncrs2.fs.fed.us/4801/meetings/ties/default.asp

"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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A week in Będlewo, Poland

August 21st-August 27th, 2003

It was with great pleasure that I accepted an invitation from the Deputy Director of the Institute of Mathematics in the Polish Academy of Sciences to speak at STATLIN'03, the eleventh international conference on mathematical statistics. The conference was to focus on *Statistical Inference in Linear Models* and to be held in the Mathematical Research and Conference Centre, Będlewo, about 30 kilometres outside of Poznan in Poland. More recent conferences in this series had been held in Poznan 1993, Jachranka 1996, Lagow 1998, and Szklarska Poreba 2000. This was my fifth visit to Poland and it turned out to be one of the best. All presentations at the conference were in English.

My journey to Będlewo began at Frankfurt airport where I met Richard Huggins from La Trobe University who was waiting at the gate for the flight to Poznan. Richard and I had first become acquainted on a previous visit to Lagow in Poland in 1998. The flight to Poznan was in a twin-engine propeller driven aircraft, not unlike the one that flies between Perth and Albany in Western Australia. While I breezed through passport control, the bearded Richard had the uncomfortable experience of having to establish his credentials by submitting documentation, which he had brought with him for just that purpose. We were greeted at the airport by representatives of the conference organizers and taken to the conference centre along with other delegates who had arrived on the same flight. The conference centre was in two parts: one was an old castle (pictured) that contained dining rooms and a bar in the basement so that conference delegates could relax and talk statistics; the other was a modern building that included a seminar room with up to date electronic facilities and accommodation. There were single bedrooms for those travelling alone and twin bed and double bedrooms for those with partners. All bedrooms contained modern ensuites. The modern building was not incongruous with the castle as it had beautiful architecturally designed facades. The buildings were set in a few acres of wooded land surrounded by a high wall, outside of which were walking paths through pine forests to sown fields. Despite the recent hot weather that Europe had been experiencing, the weather during the conference was pleasant and conducive to the exchange and dissemination of ideas.

Richard and I were the only two Australians at the conference; however, there were other Australian connections. Mohammed Ghitany, who completed his PhD at the University of Western

The Australian Connections: (from left to right) Richard Huggins, Elvezio Ronchetti (Swiss), Christine Müller (German), Tadeusz Bednarski (Polish), Brenton Clarke, Mohammed Ghitany (Egyptian).

Australia and is now working in Kuwait University, greeted me on arrival. Professor Elvezio Ronchetti of the University of Geneva was also invited. He was known to both Richard and me, and has visited La Trobe University, the Australian National University and Murdoch University. In fact, I was a colleague of his for one year at the Swiss Federal Institute of Technology in Zurich in 1983. Also in attendance was Professor Tadeusz Bednarski with whom I collaborate. He has visited Murdoch University in Western Australia on two previous occasions, and we used this conference to continue discussing further collaboration. Tadeusz is one of the Polish members of the Scientific Committee that invited Richard Huggins and me.

Eminent statistician Professor Tadeusz Caliński, who has worked widely in the area of linear models and experimental design, chaired the opening ceremony. This included welcomes from Roman Zmyślony, our prime contact for day-to-day details at the conference, and Professor Marian Nowak, the Rector of the University of Zielona Góra.

In talking prior to commencement of the conference the accidental similarity between the acronym of the conference and the name of STALIN had been noted, particularly by those from Eastern Europe. Roman Zmyślony was keen to put minds at ease and pointed out that this conference was about 50 years after the death of the former dictator. Professor Sinha, from the University of Baltimore in the USA, spoke about methods for aggregating several ranking statistics. This was followed by a talk on "Future Directions in Robust Statistics" from Professor Ronchetti who emphasized the need for development of robust methods in wider fields including finance and biology. It was flattering that he acknowledged the importance of Fréchet differentiability as developed in works by myself and Professor Tadeusz Bednarski in relation to the development of robust statistics in these other fields of research.

Richard and I both spoke on the opening day of the conference in a session chaired by Professor Ronchetti. Since the conference theme was linear models, we had both worked hard to deliver in this area. I spoke first on results related to the two way layout, with discussion of both robust and classical approaches to modelling, illustrating methodology on a barley variety data set of Immer et al. found in R.A. Fisher's book Design of Experiments. Questions involved identification of outliers or the lack of them in the two way layout. There was discussion about an evaluation of an exact test of heteroscedasticity proposed in Clarke and Godolphin (1992) that proved empirically more powerful than several other tests for heteroscedasticity proposed by Shukla in earlier literature. This work on power comparisons was joint work with a former Honours student at Murdoch University, Antony Monaco. A question of whether the proposed test was indeed the most powerful was mooted. Finally, a related problem was posed: When do the Best Linear Unbiased Estimator (BLUE) and the Least Squares Estimator (LSE) agree for a partition of the fixed effects parameter? I received a number of responses from my presentation. Professor Caliński was quick to notice that with the data I used it was more common to think of the locations at which the barley varieties were grown as random effects in Poland. Professor Simo Putanen, from the University of Tampere, Finland, revealed that in his presentation he was in fact solving the question of when the BLUE and LSE agree for a partition of the fixed effects parameters. This was a twofold surprise for me - not only was he in the audience, but he was considering the problem I'd raised. I had referred to his earlier work in my presentation. It just proves how invaluable an international conference can be for keeping abreast of current work in the field.

The family Filzmoser (from Vienna) in front of the main building containing the seminar rooms, administration and accommodation at the Conference Center.

Richard Huggins followed my presentation with a talk on "Application of the Rasch model in categorical pedigree analysis using MCEM: I Binary data." His presentation was on joint work with Guoki Qian & Danuta Loesch. Richard noted that the analysis of quantitative family data using mixed linear models was well established, has been extensively applied and the parameters are readily interpreted. On the other hand, the analysis of categorical and binary outcomes from family data is not well developed. He pointed out that the Rasch model is a type of random effects logistic regression model. By using correlated latent variables to model the relationships between individuals within the same family, it allows the standard mixed linear models used in quantitative genetics to be applied to binary family data. Moreover, in relation to his joint collaboration, the resulting models are readily interpretable by biologists familiar with standard analyses of family data. However, in relation to these models, directly maximizing the associated likelihood is computationally difficult as many multiple integrals are involved. Richard proposed the use of the EM algorithm, with MCMC in the E-step (MCEM) to find the MLE's. Under regularity conditions the MCEM sequence becomes close to the MLE with high probability, and the MLE's may be retrieved from the

stationary distribution. There were some complications in estimating the information matrix as the estimate may not be positive definite and, as the data was binary rather than continuous, there were also practical limits on the complexity of the models that could be used for the dependence between individuals. The method was illustrated on data on psychological scores from 218 individuals in 46 families affected with the fragile X condition. The scientific interest was in the relationship between the score and the level of a specific protein and IQ, and in the estimation of the heritability of the score. The extension of established mixed linear models to correlated binary data is theoretically interesting, and from a practical point of view it allows biologists to retain the intuition and models they have developed for continuous traits. Richard's exposition on the MCMC method was complemented later in the week when Mohammed Ghitany spoke on his joint work titled "Modelling the presence of long-term survivors using generalized Burr XII mixture model".

Having given our presentations on the first day, Richard and I had the luxury of attending talks, enjoying the Polish hospitality, fine dining, and going on a superb Sunday bus tour. We visited ruins of castles of former Polish Kings, museums, cathedrals and a palace dating back to the 1800's or thereabouts that had been recently renovated. We talked about current ideas in statistics and upcoming conferences. Richard ran each morning in the pine forests surrounding the grounds. I had not packed running togs on this trip and am currently working off the good Polish food, which included a delicious smorgasbord dinner on the night of the bus tour (including plentiful supplies of vodka, the national drink) and a closing barbecue held in the conference grounds. We were entertained by the Viennese family Filzmoser, consisting of Peter, Heidi and their three young children, who sang several songs in their native language.

Professor Anthony Atkinson from the London School of Economics gave the address on the closing day on "Adaptive Designs for Clinical Trials".

It was a splendid conference in all respects. The Polish hospitality was exemplary, and Richard and I wished there was that there was such support for one or more conference centres in Australia. Resulting from discussions at the conference, Professor Benarski has arranged to visit Murdoch University later this year for an ongoing collaboration, and Richard Huggins and I hope to bring out to Australia Professor Christine Müller from Germany. Richard intimated to me that he had ideas for at least three works based on the interaction that he had at the conference. The Polish statistical community is to be congratulated on a conference that was well organized and well supported. We can only feel lucky that we were selected to be ambassadors for our country at this conference that included 52 participants. The conference presentations will be published after appropriate refereeing in the journal Discussiones Mathematicae: Probability and Statistics.

Brenton R. Clarke

Reference: Clarke, B.R. and Godolphin, E.J. (1992) Uncorrelated residuals and an exact test for two variance components in experimental design, Commun. Statist.-Theory Meth., 21, 2501-2526.

The palace containing dining rooms.