



statistical society of australia incorporated

newsletter

31 March 1998

number 82

ASC14

14th Biennial Conference of the Australian Statistical Society Inc.

Included in your newsletter this month is the registration brochure for ASC14 (the 14th Biennial Conference of the Australian Statistical Society Inc.). It will be held at Conrad Jupiters on the Gold Coast from 6 to 10 July 1998 and will be overlapping for one day with TIES, the International Environmetrics Society, who will be holding their conference at the same venue from 3 to 6 July.

The theme of this conference is "Statistics in Context".

The keynote speakers are:

Norman Breslow	University of Washington
Tim Brown	Melbourne University
John Hartigan	Yale University
Trevor Hastie	Stanford University
Frank Kelly	Cambridge University
David Siegmund	Stanford University
Alan Welsh	Australian National University
Doug Zahn	Florida State University

David Morganstein (Westat) will present the Ken Foreman Lecture, while Des Nichols will deliver the Presidential Address and award the Pitman Medal in recognition of distinguished contributions to statistics.

We also have a full program of panel sessions which will be scheduled in parallel with contributed talks and possibly other panel sessions.

We are now calling for abstracts of contributed papers (due 30 April) and registrations (due 30 April, **not** 31 May as previously advertised).

Both the brochure and our Web site provide more detailed information, particularly on the format of the abstracts for inclusion in the proceedings. Our URL address is

<http://www.math.fsc.qut.edu.au/asc14.html>,

while our e-mail address is

asc14@qut.edu.au.

Looking forward to seeing you at the Welcome Reception on the Sunday evening and the Conference Dinner (which includes the show "Illusions") on the Wednesday evening,

Kaye Basford
Chair, Program Committee

Editors: D.E. Shaw, CSIRO Mathematical and Information Sciences, Locked Bag 17, North Ryde, NSW 2113.
E. Brinkley, Australian Bureau of Statistics, PO Box 10, Belconnen, ACT 2616.
R.I. Forrester, CSIRO Mathematical and Information Sciences, GPO Box 664, Canberra, ACT 2601.
Society Web page: http://www.mathstat.flinders.edu.au/stats/stat_soc.html

*The views of contributors to this Newsletter should not be attributed to the Statistical Society of Australia, Inc.
Deadline for next issue: 17 April 1998*

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CENTRAL COUNCIL

Notes from the meetings of the Central Council of the Statistical Society of Australia Inc. (SSAI) and the Australian Statistical Publishing Association Inc. (ASPAI) held at The University of Sydney on 17 February, 1998.

The Australian and New Zealand Journal of Statistics

The first issue of the new journal has been sent to Blackwell Publishers. The journal will be produced in four issues per year and will have a new look in terms of both the cover design and font used for the text. The Central Council approved the new Editorial Board at the February meeting. The first Managing Editor and Theory and Methods Editor is Simon Sheather, Murray Jorgensen is the Applications Editor, Daryl Daley is the Technical Editor and Rob Hyndman is the Book Review Editor. The Council thanked Simon Sheather and Murray Jorgensen for producing such a smooth transition to the new format and publisher.

The new Journal will be cited in the Science Citation Index. The Journal will also be abstracted in Statistical Theory and Methods Abstracts and indexed and reviewed by Current Mathematical Publications, Mathematical Reviews and MathSci.

Accreditation

The Accreditation Committee has processed the first round of applications. The Committee will be meeting once a month for the next six months to consider applications. A list of the first group to be awarded CStat and Gstat status appears elsewhere in this Newsletter.

The Accreditation Committee raised a number of issues for Central Council to consider including procedures for handling overseas qualifications, privacy issues and promotion of accreditation to the wider community. One point raised was the use of the term "Chartered". The Council moved that an amendment to the Society's Rules and Regulations be put at the Annual General Meeting in July to replace the term "Chartered" by "Certified".

Code of Conduct

A Code of Conduct, based on the draft that was circulated with the accreditation papers, will also be put to the Annual General Meeting in July. Members are encouraged to give feedback to the Secretary on the draft Code. The final version to be put to the AGM will be printed in the May Newsletter.

Subscriptions

Another issue related to accreditation was the collection of annual subscriptions. Central Council strongly supported the notion of a centralised subscription as a much more efficient method of collection of subscriptions, particularly as there will be a number of payments due for many members. Branches will still be able to set their own subscription rates but the monies will be collected centrally and the Branch component forwarded to Branches. Individuals who have CStat status will then be able to pay

their accreditation levy and Branch subscriptions in one payment. Central collection would mean that all members would have the option of paying their subscriptions by credit card and it would also make it easier to introduce other optional services like subscriptions to the New Zealand Statistical Association Newsletter for an extra fee. Branches have been asked to comment on the proposal.

1998 Pitman Medal

The 1998 Pitman Medal was awarded to Professor Eugene Seneta. The medal will be presented at the Australian Statistical Conference in July. A full citation will appear in the journal after the conference.

Honorary Life Membership.

At the February meeting the Central Council voted to award Honorary Life Membership to Nick Fisher, Ron Sandland and Richard Tweedie. Full citations will be presented at ASC 14 in July.

Use of the Web.

A Working Party has been established to look into issues associated with the Society's use of the Web. The group will provide advice on how best to structure and maintain our Web site to allow increased use for such things as membership lists, journal activities and careers material.

Australian Mathematical Sciences Council

The Council congratulated Helen MacGillivray on her election as Vice President and President-elect of the Australian Mathematical Sciences Council.

Administrative Officer

Anne Bryant has resigned as the Society's Administrative Officer. Anne was with us for a short, but very busy time as the Society established the accreditation process. We hope to appoint a replacement for Anne in the near future.

Annual General Meeting

The Annual General Meeting of the Society will be held on Tuesday, 7 July 1998 at Conrad Jupiters in conjunction with ASC 14.

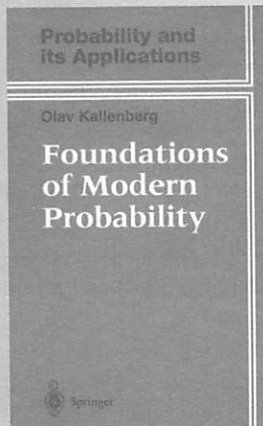
Neville Weber



*Geoff Laslett, Sandra Pattison and Pamela Shaw
at the Central Council meeting*

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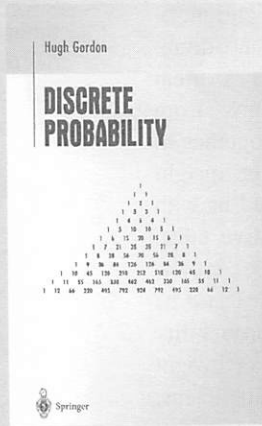


O. Kallenberg
**Foundations of
Modern Probability**

1997. XII, 523 pp.
(Probability and its Applications)
Hardcover DM 112
ISBN 0-387-94957-7

Unique for its broad and yet comprehensive coverage of modern probability theory, ranging from first principles and standard textbook material to more advanced topics. In spite of the economical exposition, careful proofs are provided for all main results. After a detailed discussion of classical limit theorems, martingales, Markov chains, random walks, and stationary processes, the author moves on to a modern treatment of Brownian motion, Lévy processes, weak convergence, Itô calculus, Feller processes, and SDEs. The more advanced parts include material on local time, excursions, and additive functionals, diffusion processes, PDEs and potential theory, predictable processes, and general semimartingales.

Though primarily intended as a general reference for researchers and graduate students in probability theory and related areas of analysis, the book is also suitable as a text for graduate and seminar courses on all levels, from elementary to advanced. Numerous easy to more challenging exercises are provided, especially for the early chapters.



H. Gordon
Discrete Probability

1997. XII, 266 pp. 3 figs.
(Undergraduate Texts in
Mathematics)
Hardcover DM 68
ISBN 0-387-98227-2

Intended as a first course in probability at post-calculus level, this book is of special interest to students majoring in computer science as well as in mathematics. Since calculus is used only occasionally in the text, students who have forgotten their calculus can nevertheless easily understand the book, and its slow, gentle style and clear exposition will also appeal. Basic concepts such as counting, independence, conditional probability, random variables, approximation of probabilities, generating functions, random walks and Markov chains are all clearly explained and backed by many worked exercises. The 1,196 numerical answers to the 405 exercises, many with multiple parts, are included at the end of the book, and throughout, there are various historical comments on the study of probability. These include biographical information on such famous contributors as Fermat, Pascal, the Bernoullis, DeMoivre, Bayes, Laplace, Poisson, and Markov.

Y.S. Chow, H. Teicher
Probability Theory
Independence,
Interchangeability, Martingales
3rd ed. 1997. Approx. 520 pp.
(Springer Texts in Statistics)
Hardcover DM 118
ISBN 0-387-98228-0

Yu.V. Prokhorov,
A.N. Shiryaev (Eds.)
Probability Theory III
Stochastic Calculus
1998. VI, 254 pp.
(Encyclopaedia of Mathematical
Sciences, Vol. 45)
Hardcover DM 158
ISBN 3-540-54687-1

O. Moeschlin, E. Grycko,
C. Pohl, F. Steinert
Experimental Stochastics
1998. CD-ROM with booklet,
approx. 200 pp. 52 figs.
Softcover DM 130
ISBN 3-540-14619-9

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BRANCH REPORTS

New South Wales

Review of 1997

Welcome all. We're back to attack another exciting round of events in 1998. Looking back at 1997, the highlight of the year for the New South Wales branch was no doubt our 50th anniversary celebrations. This was a great success, providing a forum where statisticians from varying walks of our discipline came to flock together to reflect over our past and present, and gain some insight into what the future may hold. The year provided us with a varied range of interesting and quite informative talks, covering such areas as the statistician's role in the pharmaceutical industry, the consumer price index and its use/misuse as a measurement of inflation, probability models as applied in telecommunications and an insight into what Microsoft Excel 5.0 can offer to statisticians. To culminate the year's events, the end-of-year dinner that followed the General Meeting in November put our statistical minds to the test by challenging those present to the infamous annual statistics quiz. About thirty members and guests competed in the quiz, providing a thrill for those watching. What began in 1995 as a shy initiative from Peter Petocz (UTS) and Eric Sowe (UNSW) appears to have generated a keen following among quiz-deprived branch members. At an age when some statisticians begin to relax a little after the testing times they have known, Peter and Eric were surprised to find themselves in a new role as quizmasters. For them, this was a way of turning to social advantage their common failing - the inability to shake off curiosities of statistics that come their way.

Following the format of previous years, contestants competed in teams to answer 20 questions for a reward of fine wines. Judy Simpson skilfully maintained decorum and kept a tab on the score card. Regrettably, the winning team contained an unusually large non-random selection of statistics professors. For 1998, the rules have been modified to allow a maximum of one professor per team (fractions of a professor only if rational). It is anticipated that for the 1998 quiz, the winning team would have to prove their expertise over a vast area of statistical knowledge relating to personalities, theory and practice, both historical and contemporary. Prospective contestants who make mincemeat of the questions below should not fail to attend the Branch dinner in November 1998:

1. What is particularly interesting about the standard normal variate value, $z=0.35958$?
2. What is a quincunx used for by statisticians? What does the quincunx mean?
3. George Box of Box and Jenkins fame in time series also has a famous father-in-law. Who is he?

Program for 1998 - call for ideas for statistical software workshop

This year, the NSW Branch will be hosting a stimulating array of monthly seminars, delving into areas such as choice modelling as applied in market research and the theory of sequential clinical trials. Stemming from the degree of interest manifested last year in Trevor Breusch's talk entitled 'Statistics in Excel 5.0', the NSW Branch is proposing to hold a one-day statistical software workshop during the course of 1998. In order to ensure that the workshop successfully covers areas that are of interest to a wide range of members, the NSW Branch Council is calling on interested members to communicate their ideas regarding preferred contents and a possible format for the workshop to Dr Abie Ekangaki (abiee@pop3.unsw.edu.au). The basic idea, presently, is to invite personnel from the SAS Institute, SPSS Inc and STATA to deliver short talks with suitable on-line demonstrations. It will be desirable to incorporate in these talks the results of data analysis (statistical and graphical output). How this can be done to best suit the demands of the audience is yet to be concluded. Please let us have your ideas the soonest possible.

Changes on Branch Council

The NSW Branch council is proud to announce its new incoming president, Ms Jennifer Kelly, who will take office at the Annual General Meeting on 17 March 1998. Jennifer completed a Bachelor of Science at UNSW in 1984, majoring in Psychology with supporting subjects in statistics. She then went on to complete a Bachelor degree with honours in 1991 from the University of Sydney majoring in econometrics. In 1990 Jennifer was awarded the NSW Branch Prize for Proficiency in Econometrics. She joined the branch council in 1993 and a year later took up position as Branch Secretary, a responsibility she has handled extremely well since. It should be pointed out that Jennifer will be the first president of the NSW Branch to have been a former prize winner of the Society. Many congrats Jenny!!



NSW President Jennifer Kelly

Dr Alun Pope (University of Newcastle) will be taking over responsibility as Branch Secretary, while Associate Professor Robert Mellor (UWS Macarthur) will become the new treasurer, replacing Peter Wright (UTS) who has done a very efficient job. Both the out-going president, Professor David Griffiths (University of Wollongong), and out-going treasurer, Peter Wright, deserve a big round of applause for their dedication and contribution to the running of the branch council. No doubt their continued contribution as branch members will be greatly valued.

Two branch members, Associate Professor John Rayner and Dr Abie Ekangaki, will be standing down from branch council in 1998. However, they will both continue their involvement as members of the Branch.

The branch council is happy to welcome on board three new council members: Ed Bosworth, Rebecca Oyomopito and Roger Robertson.

Membership and other matters

1998 has started with the admission of six new members to the NSW Branch. A hearty welcome to Tim Downie (CSIRO), Louise Carter (Datapharm), Mohamed Ghitany (Kuwait University), My Lan Diep (NRMA), Veronika Sandinata (NRMA) and Mark Young. We trust that you will all contribute actively to the year's events.

An important area of focus in 1998 for the NSW branch, is to encourage the active involvement of young statisticians. Clearly, the future of our society relies substantially in the creative participation of today's younger generation of statisticians. To this end, it is desirable to continually introduce diverse and interesting events such as statistics workshops, career development programs and social functions that would revitalise the enthusiasm and overall activity of young statisticians in the NSW branch. It is for this purpose that the NSW branch set up the Young Statisticians Special Interest Group (SIG), currently coordinated by Susan Hoffman (shoffman@nata.asn.au). The NSW branch council wishes to invite young statisticians throughout the state to send Susan Hoffman their ideas and opinions about possible incentives and schemes for boosting activities of this SIG. We wish to make 1998 a great year for all.

Abie Ekangaki

Victoria

Statistics in Human Genetics

At the July meeting the talk was given by Warren J. Ewens, Professor of Biology, University of Pennsylvania. Warren spoke on several interesting topics in Human genetics illustrating probabilistic and statistical applications. The human genome project has stimulated research in the area and there are many challenging problems. One problem is to reconstruct DNA sequences from fragments cut from a length of DNA. A Poisson process is used to model where fragments will cut, and lengths and types of fragments need to be chosen to get an acceptable coverage of the sequence.

The BLAST algorithm for matching DNA sequences is widely used. It scores a positive value for matching bases and a negative value for mismatches along two sequences. The accumulated score along sequences is modelled by a random walk, and a test for similarity is based on this model. The Transmission Disequilibrium Test (TDT) determines if a disease gene is linked to another locus. This involves data of parents and offspring who are affected with the disease and whose identity at the linked locus is known. It was stressed that a full understanding of data in Human Genetics is required for statistical analysis; for example, in the ascertainment problem with families, the analysis has to be conditional upon families with affected children who have been ascertained.

A theme common to many problems in human genetics is that models and inferences based on independent and identically distributed random variables may be highly misleading. Furthermore, in some problems it is not even clear what the data are. Warren enthusiastically stressed these points to a substantial audience, well-rewarded for its attendance despite a public transport strike.

Issues in research into learning statistics

The August meeting, held at the Swinburne University of Technology, was entitled "Issues in research into learning statistics". Nick Garnham introduced this topic with a brief look at the work of the International Association for Statistical Education (IASE) in sponsoring the dissemination of research into statistical education through its International Conference on Statistical Education (ICOTS) held four-yearly (next in Singapore, June 1998); its Round Table for an invited group of statistical educators, also every four years; its sections at ICME and the ISI conference; and its Journal, *Teaching Statistics*.

The bulk of the meeting was devoted to three aspects of learning statistics as presented by three speakers who are active in research into these areas. Professor Peter Jones, Swinburne University, considered the role of technology in teaching and learning statistics, especially the possibilities of the graphical calculator. This technology has the potential to amplify the performance of students as it has almost the capacity of statistical packages of only a few years ago. The problem of how to use it to build understanding was examined using the idea of the intelligent partnership between the user and the technology. This concept goes beyond the idea of the graphical calculator as simply a powerful statistical tool and is the subject of current research into how to model the student-technology partnership in learning.

Kay Lipson, of Swinburne at Lilydale, discussed "What does it mean to know and understand statistics, with reference to several different themes illustrated from the point of view of assessment".

These were understanding as:

- representation, such as using statistical vocabulary, notation and structure to represent ideas and solve problems;
- knowledge structure, as shown in concept maps;

- connections among types of knowledge, such as between formal and informal experiences;
- the active construction of knowledge whereby the individual constructs their own understanding building on their previous experience;
- situated cognition, which recognises the relationship between the knowledge and the situation in which it was acquired.

Lyn Roberts, University of Ballarat, discussed her research into student perceptions of service statistics subjects. Her surveys of students both while studying statistics and again later in their degree, were designed to assess the extent to which students exhibited long-term retention of what they had been taught. As most service statistics is taught in the first year but much of the application isn't until second or third year. Lyn's third year students were mostly unsure of their ability to apply statistics correctly even though they recognised their need for it in their later studies. This suggests that such subjects could be more effective if taught later rather than earlier in their courses.

The Role of an Industrial Statistician in a Large Mineral Processing Company

The September meeting was addressed by Gregory Peterson a Senior Scientist at Alcoa of Australia Limited, who works primarily as an Industrial Statistician.

The talk began with a description of how large a company Alcoa of Australia is. Alcoa of Australia provides 15% of the world's alumina which, for the novices, is aluminium oxide, the primary ingredient in the manufacture of aluminium. Alcoa owns the 2nd, 4th, and 5th largest alumina refineries in the world. Alcoa is responsible for 5% of Australia's merchandised exports, and contributes \$3.7 million per day in the reduction of Australia's net debt. In Western Australia, Alcoa has 3 bauxite mines, 3 alumina refineries, 2 shipping terminals and a gold mine, while in Victoria the company owns the Point Henry aluminium smelter, a brown coal mine, and power station at Anglesea. It also operates the Portland smelter and is a joint owner there. Alcoa owns the world's largest bulldozer, and has two of them.

Moving to more statistical matters, he illustrated the role that statistics plays in most facets of the manufacture of alumina. Statistical problems are many and varied. Greg illustrated by plucking some examples from just the alumina refining residue storage operations:

- Calculating risks associated with the absence of spare parts, while having almost no historical data.
- The design and analysis of experiments which are aimed at finding the best way to get mud to settle.
- Attempts to maintain a uniform density of materials when the process involved is cyclical.
- Constructing environmental models designed to simulate the dispersion of dust around mining sites.
- Schemes for sampling soil to determine contaminant levels accurately.

- Predicting the amount of storage needed in dams which collect runoff from mines, while simultaneously allowing for environmental factors such as precipitation.

As with most industrial applications of statistical methods, measurement system performance is a major issue that calls upon the statistician's skills. Finally, Greg gave a summary of his thoughts on the importance of statistical thinking for all employees in an industrial environment, which can easily be extended to statistical thinking in general. This included the need to identify structure in randomness, separate deterministic variation from its random counterpart, knowing the consequences and importance of variability, knowing the appropriate action in response to variability, being able to identify causes of variability, and knowing how to avoid pitfalls due to variability.

Belz Lecture

1997 marks the 100th anniversary of Maurice Belz's birth as well as that of Edwin Pitman. It was appropriate then that Professor Bruce Brown, who was a student of Belz, and is also based at the University of Tasmania, where Pitman spent almost his entire professional life, should deliver the 1997 Belz Lecture. Bruce's lecture was entitled "On the Importance of being Smooth". Bruce first listed what seemed to him to be the important qualities of a statistical technique, such as objectivity, coherence, efficiency, robustness, computational ease and regularity, (more recently) "bootstrappability", and finally the idea of "smoothness".

Bruce then evaluated a number of techniques that have been very important in the development of Statistics over the last 75 years in terms of these criteria. He pointed out Least Squares methods have nice properties but lack robustness and that the methods developed to overcome this, such as rank based methods, M-estimators and trimmed means, all have the deficiency in that they are not smooth, which probably explains why they have not been adopted much in practice.

In contrast the breadth of applications of Generalised Linear Models is probably related to these methods being "ultra-smooth". Cox's Proportional Hazards Model in Survival Analysis is another case where smoothness is present and is one reason why these methods have proved so popular and useful. Finally, Bruce suggested that important developments in Bootstrap theory and practice could relate to attempts to overcome problems with the Bootstrap when the influence function was not smooth.

During the Belz Dinner Emeritus Professor Evan Williams talked about the wonderful but contrasting contributions made by both Belz and Pitman, while Professor Terry Speed gave a colourful talk of his memories of Belz from a student's viewpoint.

Examples of Biometry

The final Branch meeting of the year was addressed by Byron Morgan of the University of Kent at Canterbury. He commenced by listing some common perceptions of a professional statistician: a 'rather dull, bland, male,

dreary type of person' who performs tabulations of data, regressions and correlations, draws histograms and other graphs and devises simple probability models, typically using the binomial distribution. He promised that his presentation, on three examples of statistical modelling in biology, would involve all of these, except for some of the personal qualifiers!

The first problem concerned a mathematical description of the way in which strawberry plants flower. There is a simple branching structure to such inflorescence: the secondary axes branch from about half way up the main axis, the tertiary axes from about half way along the secondary axes, and so on. Each axis supports a flower. The rank of a flower is the order of its supporting axis. The number of flowers of each rank is recorded for each plant, and Byron described a correlated binomial model for the number of flowers of a specified rank given the number of flowers of the previous rank. The two parameters were estimated by maximum likelihood. The estimates suggested that the first inflorescence should be treated separately. The model was also useful because it allowed the researchers to quantify the loss of efficiency caused by recording the total number of flowers of each rank, rather than the complete branching structure.

The second problem related to biological control of the diamondback moth, which is becoming resistant to chemical control. Experiments were conducted in which moth larvae were subjected to various concentrations of the controlling agent (a virus), and the number of dead larvae were recorded daily up to the end of the experiment, 11 days after treatment. Byron showed us tables and graphs of the mortality data, and then described a statistical model that explicitly included ingestion of the virus, initial defence of the host, growth of the virus within the host and mortality of the controlling agent. The model was fitted to data on moth larvae housed separately, but could also be used to simulate the control of communally housed larvae, in which secondary infection is spread by larvae bursting!

The final problem involved modelling the survival of British lapwings using weather covariates. The response data consisted of the number of birds ringed as nestlings in 1960, 1961 ... 1992, and the number of these found dead in each subsequent year. The covariates were monthly means of 13 weather variables, such as mean air temperature or number of days of lying snow, over weather stations. Various models for first year survival, adult survival and reporting probability were proposed; these could be constant, time dependent (with season), or depend on covariates. Score tests were used to discriminate amongst the plethora of possibilities. This type of study was extended to other animals, including Soay sheep on the island of Hirta, one of the largest of the St. Kilda archipelago. In keeping with his promise, Byron showed us some histograms, but they were constructed of sheep's skulls sorted by sex and size, and laid out horizontally on the ground.

Byron has visited Melbourne for extended periods on previous occasions, and he was able to catch up with some

of his many friends here at the dinner following the meeting.

A number of Victorian statisticians attended the 40th Annual Statistical Conference in Auckland. This was an excellent conference. The convenor of the conference organising committee was David Scott well known to us in Victoria. Richard Huggins gave two invited talks on Capture-Recapture. Also seen at the conference was Chris Lloyd, who spent some time both at Melbourne and La Trobe, and is currently at University of Hong Kong.

Ian Gromm who lectures at VUT is currently on OSP improvement at the University of Wisconsin-Madison. He is working with Spencer Graveson on a project for the four US car manufacturers. The Centre is a vibrant research facility with George Box adding considerably to the day to day ruminations. George is currently trying to break down the barriers between academic statisticians and industrial practitioners whether they come with an engineering or statistical background.

Geoff Bruton

Queensland

The Changing Role of the Australian Bureau of Statistics

On 23 February Mr Brian Doyle, Regional Director, Queensland, of the Australian Bureau of Statistics (ABS) addressed the Queensland Branch on the "Changing Role of the ABS".

Brian provided a brief personal employment history which demonstrated his extensive experience in the range of statistical activities of ABS, including National Accounts, Population Census and Surveys to name a few. He has substantial overseas experience working in 30 countries in senior statistical roles. He has provided management oversight to population censuses in countries such as Vietnam and, most recently South Africa, when they ran their first census of all races.



Tony Pettitt making a point (probably Bayesian) to Brian Doyle, speaker at SSA Queensland's February meeting, while Gordon Smyth, Queensland Branch President, and Water Robb, ASC14 Cair, mull it over

Brian then outlined how ABS has responded to improving technology by providing access to data electronically on disk, CD and direct access through on-line services such as their web site. This has had an impact on publications which have become smaller by reducing the amount of data presented in tabular format but have improved through the introduction of statistical commentary on the main features. This improves the information value of the publications. Publications have moved from being based on a specific collection towards being thematic, that is based on a topic for which data may come from a number of collections.

ABS has a consultation strategy which includes the Australian Statistics Advisory Committee, user advisory groups for topics, such as transport, and outposting of officers to assist with developing priorities. In Queensland Brian has an officer nominated as the liaison officer for each department: there is the Queensland State Statistical Consultative Committee and a Statistical Liaison Officer network for providing input to Queensland priorities.

Brian outlined how ABS has reduced burden on small business by reducing the number of survey questions they must respond to each year: 20% less so far.

Opportunities for graduates arise through an intake of between 80 and 100 graduates each year as Cadets or General Administrative Assistants. There is no particular emphasis on Mathematics and Statistics graduates, with Economics, Geography and many other degrees being suitable. Advertisement for the intake occurs in March, closing May for officers to start in the following year. Good Mathematics and Statistics graduates could be engaged in the Methodology Branch working predominantly on surveys and sampling.

Discussion centred on opportunities for access to data sets for research or teaching. While joint projects are possible, often researchers have problems with the ABS rules about publication which may constrain publication of material, particularly about methodologies. Brian shared his experiences in Australia and overseas with Members of the Executive at dinner.



Kim-Anh Do, Michele Haynes, Ingrid Baade and Robert King at SSA Queensland's February meeting

Walter Robb

South Australia

Biometrics 97

Adelaide played host to the Biometrics 97 conference held at Wirrina Cove Paradise Resort 30 November - 4 December, 1997. The conference was a great success and attracted almost 250 statisticians from around the globe. Members of the South Australian Branch featured prominently on the lists of delegates, speakers and organizers.



Scholarship recipients Ben Daughtry and Colleen Hunt

The Branch also supported the Conference by providing scholarships for two South Australian post-graduate students to attend. University of Adelaide students Colleen Hunt and Ben Daughtry were chosen, from an excellent field of applicants, to receive the scholarships.

New statistical approaches to problems in Engineering and Data Fusion

At the December Branch meeting Daniel McMichael of the Centre for Sensor Signal & Information Processing spoke of new statistical approaches to problems in Engineering and Data Fusion.

Historically, engineers have been keen users of statistics, both in its established role as an evaluation methodology, and also as the basis of algorithm and system design under uncertainty. This talk examined a selection of "engineering" problems encountered by the author over the last year which, when unpacked from their application detail, pose demanding statistical problems that require new algorithms. These include reconstruction of 3D bone models from single x-ray images, detection of land-mines from visual and infrared imagery, and Bayesian networks for patient monitoring and data mining.

The talk briefly described novel EM algorithms for camera calibration and for joint association and calibration, maximum discriminative likelihood estimation of separate and shared component mixture model classifiers and two fast algorithms for parametric and structural inference of discrete Bayesian networks.

Biographical: Daniel McMichael leads the Data and Information Fusion Program at the Cooperative Research Centre for Sensor Signal and Information Processing (CSSIP) in Adelaide. He graduated from Oxford University in Electrical Engineering in 1983, and was

awarded a D.Phil from Oxford in 1987. He is recipient of the IEE Heaviside Premium and the ESSO Centenary Award, and is an adjunct associate professor in Electronic Engineering at the University of South Australia. He was co-general chair for the first Australian Symposium on Data Fusion in Adelaide in 1996, and is co-chair of the First International Workshop on Image Analysis and Information Fusion in Adelaide in 1997.

Selection Models for Longitudinal Data with Nonrandom Dropout: Illustration of Sensitivity

Mike Kenward of The University of Kent at Canterbury also addressed the South Australian Branch in December on selection models for longitudinal data with nonrandom dropout as an illustration of sensitivity.

There has recently been much work done on the development of models for incomplete longitudinal data that incorporate explicitly the missing value mechanism. It is plausible that, in many settings, the probability of a value being missing depends on the unobserved observation, even when account is taken of all the observed data. This is known as nonrandom, or informative, missingness. Models that incorporate nonrandom missingness face special problems in that, to estimate the parameters of the missing value mechanism, assumptions must be made that cannot be examined from the data under analysis. One such example is the outcome-based selection model of Diggle and Kenward for longitudinal data with dropout.

The sensitivity of this model to distributional assumptions was explored for a data set on the occurrence of mastitis in dairy cows, a setting in which the occurrence of mastitis can be modelled as a dropout process. It was seen that the conclusions about the dropout mechanism depend critically on distributional aspects of the model. Further examination revealed, in the light of external information on the likely distribution of the data, how apparent evidence for a nonrandom dropout mechanism can be identified with the presence of outlying responses. It was concluded that a plausible model for the data does not require the assumption of nonrandom dropout. Finally, the role of such models in data analysis was considered.

Members of the South Australian Branch attended an afternoon tea to mark the official opening of Biometrics SA, which was followed immediately by a General Meeting of the Branch.

Where's the Statistics?

With the increase in technology, the amount of information being collected by companies is increasing drastically. Some companies now record everything that moves without much thought as to what they require the information for.

Statistics in the traditional sense are sometimes not appropriate due to the large amounts of data collected. In other instances statistics could be of a large benefit - if they only knew!

This talk looked at the issues of large data sets, databases, data mining (the catch phrase of the 90s), data warehouses and the role and importance of statisticians in these areas. This discussion was set against work undertaken on the national data collection of Vocational Education and Training in Australia, there over 9 million records are collected annually.

Biographical: Sandra Pattison has an MSc in statistics from the University of Adelaide. After starting as a statistical consultant at Waite Agricultural Research Institute and a brief stint as statistical assessment officer with SSABSA, Sandra spent three and a half years in the Department of Statistics at the University of Adelaide. Currently she is a senior project officer in research and analysis at National Centre for Vocational Education Research (NCVER)

Gary Glonek

Canberra

Who Counts and Why? A Perspective of the History of Women and Men in Statistics

The Knibbs lecture in November was given by Professor Sue Wilson of the Centre for Mathematics and its Applications at the Australian National University (ANU).

After discussing ancient censuses and what the questions asked reveal about the concerns of those doing the asking, Sue took three loosely-matched pairs of statisticians: Florence Nightingale and Francis Galton; Gertrude Cox and William Cochran; and an Australian pair, Helen Newton Turner and George Knibbs. While the successful collaboration of Cochran and Cox is shown in their joint publications, it seems that Nightingale and Galton did not get on so well. Nightingale's attempt to establish a laboratory for the application of statistics in Oxford was thwarted by Galton, who himself established a more mathematically oriented statistical laboratory in London. Maybe statistics would be a very different discipline if Nightingale had succeeded.

Discussants were Professor Joe Gani of the ANU, and Ms Susan Linacre of the Australian Bureau of Statistics (ABS). Joe reflected on his personal knowledge of Cox, Cochran and Turner. He concluded by strongly stating that the statistics profession needs all the brainpower it can get (both male and female) to face challenges such as funding restrictions in both universities and the ABS. Susan spoke about gender issues at the ABS. One example was the way the ABS addressed concern expressed about the Australian Standard Classification of Occupations having fine delineation of "male" occupations but crude delineation of "female" occupations.

A fine seafood buffet at Rydges Capital Hill brought the evening to a close.

Management models for red deer in Scotland: embedding a population dynamics model into statistical inference

Professor Stephen Buckland of the University of St Andrews, Scotland, addressed the December Branch meeting. He explained that Germans and Americans love to come to Scotland to stalk male Scottish red deer, despite the fact that Scottish deer are weedier than German or American deer! Thus Scottish deer managers would like a large number of stags in their deer populations, without exceeding a forest's ability to support deer.

The available data in any given forest are count and cull data for stags, hinds and calves. Steve introduced a state space model for deer populations involving 40 age and deer type combinations, along with an equation to relate those 40 categories to the three categories of available data. He then used a weighted smoothed bootstrap to smooth samples, then resampled from the smoothed density. He also used the Kalman filter to combine observed and predicted values before stepping forward in time.

Steve presented an extensive example involving a herd of about 1800 deer, with eight years of count and cull data. A culling scenario was established, involving culling 2% of young stags, 50% of mature stags (5 - 10 years old), 75% of old stags, 35% of single hinds and 0% of hinds with calves. The population dynamics model showed that over about 20 years, deer managers could have their cake and eat it too, because the deer population gradually declined (less pressure on the forest) but the number of non-trophy-yielding deer culled also went down.

The Branch's traditional Christmas barbecue followed the meeting.

Alice Richardson

Canberra History

The very interesting material in the last issue of the Newsletter about the NSW Branch's 50th anniversary prompted discussion amongst my colleagues about the early history of the Canberra Branch.

In the article it implied that the Canberra Branch was in existence at the time of the amalgamation in 1962, and may have been so for some time. Can anyone please shed any light on the question of when the Canberra Branch was formed, and any of its pre-amalgamation history? If so could you please contact me.

Bob Forrester

SSA Canberra Branch Inc. WWW home page

The Canberra branch of the Statistical Society of Australia finally has its own home page on the World Wide Web! You will find it at the following URL:

<http://www.ozemail.com.au/~ssacanb>

The front page of the home page provides an index for easy navigation of the rest of the web site. In particular you can access both the present and past meeting notices for the branch, browse details of upcoming talks, and access contact details for members of the Canberra branch council - all at your fingertips. You can also print off a membership form for those people you know who want to join the society.

Any suggestions, corrections and comments should be emailed to:

ssacanb@ozemail.com.au

Happy surfing!

Melissa Dobbie
Administrator of Canberra
Branch Home Page

SURVEY AND MANAGEMENT

Longitudinal Analysis for Complex Surveys, Statistics Canada, Ottawa, Canada 19-22 May 1998

Statistics Canada's XVth Annual International Methodology Symposium will be on the topic of longitudinal analysis for complex surveys. In conjunction with the symposium, Statistics Canada and the Centre de recherches mathématiques (CRM), University de Montreal, are sponsoring a workshop on this topic.

The focus of the Symposium '98 is on recently developed methods in longitudinal data analysis. The symposium will give participants an opportunity to meet colleagues who are involved in solving problems unique to the analysis of survey data, including David Binder, John Eltinge, Wayne Fuller, Harvey Goldstein, Lisa Lavange, Danny Pfeffermann, and J.N.K. Rao.

For further information visit our website:

www.statcan.ca/english/conferences/symposium98/index.htm

MEDICAL STATISTICS

Epidemiology workshop for ASC14

A two-day workshop has been organised for the first two days of the biennial conference, 6 and 7 July 1998, based around the biostatistics special guest Norman Breslow. Full details are contained in the flyer accompanying this newsletter. The major theme will be on contemporary issues in the design and analysis of case-control studies, with a sub-theme on hierarchical modelling in epidemiology, with Breslow giving keynote talks on each. We are encouraging contributed papers in line with these themes and hope bio-statisticians and epidemiologists will present data from studies either in progress or completed, with analysis that again need not be complete, aimed at raising questions and discussions about methodological issues. The Australasian Epidemiology Association has kindly agreed to provide some support for up to three of its members to attend. Although the workshop will not be a structured course it should be a great opportunity to learn from one of the world's experts in epidemiological data analysis. Please see the enclosed brochure for more details or refer to the ASC14 website.

Biostatistics infrastructure

In the last newsletter I reported on some moves by a few individuals in the medical and public health research world to try to alleviate a serious and growing shortage of well-trained biostatisticians in this country. I described a proposal for developing a system of Honours scholarships that might help attract more students into this area. On a related topic, I have obtained some interesting information on the health research system in New Zealand, where the Health Research Council funds biostatistics units in each of the country's four medical schools, with two full-time positions supported in each unit. This is a vastly stronger arrangement than in Australia, where the National Health and Medical Research Council (NHMRC) does not provide any similar infra-structure support. Some letters have been written to encourage the NHMRC to move in this direction. If more firmly supported jobs were created, it might help on the "supply side", encouraging more students to take up biostatistics.

Comments welcome as usual, and this time my e-mail address is appended to make it really easy to respond!!

John Carlin

j.carlin@medicine.unimelb.edu.au

ACCREDITATION

Accredited Members

At the February meeting of the Central Council the following applications for accreditation were approved.

GStat:	Michael Kunkler Michelle Vella
CStat:	Michael Adena Ross Cunningham Keith Dear Annette Dobson John Donnelly Nicholas Fisher Richard Jarrett Damian Jolley Raymond Lindsay Jane Matthews Ross Sparks Anthony Swain Siu-Ming Tam Dennis Trewin

Neville Weber
Secretary, SSAI

FASTS NEWS

The most recent FASTS Newsletter contained the following points:

1. "SEND MORE MONEY, SEND IT TO ME, AND SEND IT NOW."
2. WIDE SUPPORT FOR "CRISIS OR CROSSROADS?" FORUM
3. NEW POLICY DOCUMENT LAUNCH
4. HECS FEES AND SCIENCE ENROLMENTS
5. PM'S SCIENCE, ENGINEERING AND INNOVATION COUNCIL
6. SCIENCE NOW!
7. HOUSE OF REPRESENTATIVES INQUIRY
8. NEUROSCIENCE SOCIETY LECTURE
9. NEW SCIENCE JOURNAL
10. MEDIA HEADLINES

If you would like to read the whole Newsletter or to see FASTS Press Releases visit the FASTS Home Page at

<http://www.usyd.edu.au/su/fast/>

CONFERENCE REPORTS

Biometrics97

International Biometrics Society Australasian Region Biennial Meeting, 30th November - 4th December, 1997

The conference was held in 'Paradise' at Wirrina Cove Resort, Second Valley, South Australia. The major themes covered over the four days of conference proceedings were animal abundance, mixed model theory and computing in biometry.

Invited speakers on animal abundance included Byron Morgan, who showed how Markov chain models and Bayesian techniques can be used to estimate animal survival. How spatial models can be used to estimate abundance from line transect surveys was an issue addressed by Steve Buckland. Hugh Possingham debated the need for formal null hypotheses when making management decisions for threatened species. A comparison of line and strip transect methods for Southern Bluefin Tuna was an issue addressed by Ann Cowling. From this informative talk we can now all identify a school of bluefin tuna from an aerial view!



Gordon Smyth, Ari Verbyla, & Kaye Basford

Mixed Models and its extensions was a topic discussed by invited speakers, Mike Kenward, Murray Aitken, Brian McArdle and Gary Glonek. Mike Kenward illustrated how to model the covariance structure of repeated measures experiments using smoothing splines. Modelling with Generalised Linear Mixed Models using an EM algorithm in GLIM was an issue addressed by Murray Aitken, with Brian McArdle discussing the appropriateness of such models together with Monte Carlo Markov Chains to describe animal population variability essentially when populations are in decline. How to approach Multivariate Categorical Data was discussed in detail by Gary Glonek.

Computing in biometry was addressed by Arthur Gilmour who spoke on the developments of ASREML and its ability to fit models for spatial analysis, mixed model theory and more! With live demonstrations we were able to see the capabilities of such a program but we are still waiting to see the results from one particular example!

Other speakers contributed to the program by presenting papers on these themes and from Medical Statistics.



Byron Morgan (President IBS) and Ross Cunningham

A large contingent of papers were presented by postgraduate students. All of these were of very high standard which made presenting the postgraduate award a very difficult task for the judges. All postgraduates who presented papers must be congratulated for their efforts, particularly Heather Podlich from the University of Queensland and Rachael Fewster from St Andrews who shared the award.



Student Prize winners Heather Podlich and Rachael Fewster

The social program was just as exciting with a welcoming barbeque and catch up with old friends on the first night before a full program the following day. The conference dinner was held on the Tuesday evening with entertainment from the Geoff Coates Band with all the oldies but goodies to keep everyone up on the dance floor until the early hours. The partying continued for many at the front bar and for some, continued until the start of the next days proceedings! Other activities for the week included bushwalking, wine tasting in McLaren Vale and Harley rides. Others chose relaxing with a game of golf, swimming or just a casual stroll around the resort.

The conference was a great success, thanks and congratulations to the conference committee.

Michelle Lorimer

Report on "New developments in REML ..." Workshop

On December 5 1997 a one-day workshop on "New developments in REML and its implementation in Genstat 5 Release 4.1" was held at the Waite Institute in Adelaide. This workshop immediately followed the very successful Biometrics 97 meeting held at Wirrina Cove near Adelaide.

Approximately 60 participants attended the workshop. It was a very busy day with a series of presentations by Brian Cullis from the Wagga Agricultural Institute and Sue Welham from IACR-Rothamsted, Harpenden, UK.

The new REML directive in this release of Genstat makes use of the Average Information algorithm and enables the use of a much larger class of models to be fitted. Interspersed with the talks were practical sessions which enabled the participants to try out the new features using real sets of data.

This was a very useful workshop for practising statisticians wanting to keep abreast of recent theory and its implementation in a statistical package. Thanks to Michelle Lorimer and her organizing committee for an excellent workshop.

Bob Forrester

BIOMETRICS SOUTH AUSTRALIA ESTABLISHED

Biometrics South Australia (Biometrics SA), a co-operative group established by the South Australian Research and Development Institute (SARDI) and the University of Adelaide through the Faculty of Agricultural and Natural Resource Sciences (FANRS) and the Department of Statistics was officially launched on February 11, 1998. Biometrics SA was established to provide high quality statistical advice, consulting and collaboration with scientists and postgraduate students in SARDI and FANRS on the design, analysis and dissemination of results of experiments, surveys and other studies. Training in applied statistics and statistical computing, both at undergraduate and postgraduate level in FANRS and for scientists in SARDI and FANRS will also be a primary objective.

Biometrics SA has seven staff members under the Directorship of Dr Ari Verbyla, who has been seconded

from the Department of Statistics. The group is located on the Waite Research Precinct, a joint facility for FANRS, SARDI and CSIRO. The offices housing Biometrics SA have been recently refurbished, and newly equipped. New computing equipment is in place, thanks to support by a Grains Research and Development Corporation grant held by Kaye Basford and Brian Cullis, SARDI, FANRS and the Department of Statistics. The establishment of Biometrics SA will continue the moves to link various Biometrics groups around Australia.

This initiative comes at a time when funding cuts threaten the nature of our Universities and research groups such as SARDI. The commitment emphasizes that statistics is a vital part of applied research for the two organisations. We look to a bright future.

Ari Verbyla

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AUSTRALASIAN CONFERENCES

CONFERENCE SUMMARY

SCIENCE NOW! Forum, 7-10 May 1998, Melbourne Exhibition Centre,
Information: Niall Byrne, Program Coordinator, tel. (03) 5253 1391, mob. 0417 131 977 or email: niall@aahl.dah.csiro.au

The International Environmentrics Society Conference (TIES98), 3-6 July 1998, Jupiter's Casino, Gold Coast.
Information: Alice O'Neil, CSIRO Mathematical & Information Sciences, PO Box 120, Cleveland QLD 4163; tel. (07) 3826 7212; fax (07) 3826 7304. (Further details in Newsletter 81.)

14th Australian Statistical Congress, 6-10 July 1998, Jupiter's Casino, Gold Coast.

Information: ASC14, School of Mathematical Sciences, Queensland University of Technology, GPO Box 2434, Brisbane QLD 4001; email asc14@qut.edu.au; fax (07) 38642310. (Further details in Newsletter 78, 81 & this issue)

There is a list of Australasian statistics conferences for 1997 and 1998 at:

<http://www.maths.uq.oz.au/~gks/webguide/conf.html>

SCIENCE NOW! Forum
Melbourne Exhibition Centre
7 - 10 May 1998

SCIENCE NOW!, the first National Science Forum will be held at the Melbourne Exhibition Centre, on 7-10 May 1998, co-located with the Great Australian Science Show.

The aim of the Forum is to showcase the best and latest Australian science and technology, especially involving younger scientists.

The major sponsor, the Victorian Government has been joined by the Commonwealth Department of Industry, Science and Tourism in supporting the 1998 and 1999 forums.

SCIENCE NOW! will have four main elements:

Breaking new ground:

Fresh Australian science, scientists starting to make their mark in the world of science will be encouraged to present their work to the media and the public. A scientific committee will select the topics, key criteria will include that:

- the work has not received significant media attention
- the scientist can present the work in a way that makes it interesting/relevant to the media.

Nomination criteria will be circulated in mid-February.

Science in society - point and counterpoint

Debates and forums involving leading researchers and the general public both in the auditorium and via the media.

Workshops

Professional development opportunities for business, journalists, scientists & science communicators.

Youth Program

Aimed at secondary students with science activities and presentations on subject choices, choosing a university, scholarships and developing a career in science.

Niall Byrne is Program Coordinator for SCIENCE NOW! and can be contacted on tel. (03) 5253 1391; mobile 0417 131 977 or by email: niall@aahl.dah.csiro.au

OVERSEAS CONFERENCES

International Conference on Statistical Methods and Forest Models, 19-21 May 1998, Moscow, Russia

Information: Dr Victor Teplyakov, Deputy Head RFFS, Headquarters-Research Department, Federal forest Service of Russia, Pyatnitskaya Str. 59/19, Moscow 113184, Russia; email Tepl@forest.msk.su or George Gertner, Leader IUFRO S4.11.01 (Statistical Methods) W503 Turner Hall, Department of Natural Resources and Environmental Sciences, University of Illinois, Urbana, IL 61801; email gertner@uiuc.edu; fax +1 (217) 244-3219.

Workshop and Symposium on Longitudinal Analysis for Complex Surveys, 19-22 Ma6 1998, Statistics Canada, Ottawa Canada.

Information: www.statcan.ca/english/conferences/symposium98/index.htm

International Conference in Reliability and Survival Analysis, 21-24 May 1998, Northern Illinois University, De Kalb, Illinois, USA.

Information: Nader Ebrahimi, Division of Statistics, Northern Illinois University, DeKalb, IL 60115, USA; fax +1 (815) 753 6776; email icrsa@math.niu.edu; web site <http://www.math.niu.edu/StatDiv/icrsa98/>.

Fifth International Applied Statistics in Industry and Manufacturing Summer Conference, 1-3 June 1998, San Diego, California, USA.

Information: Bradley Brown, 5IASIM Conference Chairman, email bjbrown@eagle.cc.ukans.edu; fax +1 (913) 841-2133; mail Brad Brown, ISAI, PO Box 189, Mulvane, KS 67110, USA.

Seventh International Congress of Ecology, Frontiers of Statistical Ecology with Environmental Statistics, 19-25 July 1998, Florence, Italy.

Information: Prof. Wolfgang Urfer, Department of Statistics, University of Dortmund, D-44221 Dortmund, Germany, tel. +49 231 755-3121, fax +49 231 755-5303, email urfer@omega.statistik.uni-dortmund.de or Dr Phil M. Dixon, Savannah River Ecology Lab, University of Georgia Drawer E, Aiken SC 29802, USA, tel. +1 803 725-2472, fax +1 803 725-3309, email dixon@srel.edu.

13th International Conference on Statistical Modelling, 27-31 July 1998, New Orleans, Louisiana, USA.

Information: Brian D. Marx, Department of Experimental Statistics, Louisiana State University, Baton Rouge, LA 70803-5606; email brian@stat.lsu.edu; fax +1 (504) 388-8344; website <http://stat.uibk.ac.at/iwsm>.

Taipei International Statistical Symposium, 15-17 August 1998, Taipei, Taiwan

The theme of this symposium is "Recent Developments in Statistical Theory and Applications".

Information: Bureau of Statistics, DGBAS, Attn: 1998 Taipei International Statistical Symposium Organizing Committee, F6, No. 2 Kwang Chow St. Taipei, Taiwan; tel 886-2-2382 3824-9; fax 886-2-2361 6063; email tiss@emc.dgbasey.gov.tw; <http://www.dgbasey.gov.tw/dgbas03/tiss/tiss.htm>

International Congress of Mathematicians 1998, Session on Mathematical Software, 18-27 August 1998, Berlin, Germany.

Information: Winfried Neun, Konrad-Zuse-Zentrum, Takustrasse 7, D-141195 Berlin, Germany; email neun@zib.de.

COMPSTAT'98, 24-28 August 1998, Bristol, UK.

Information: COMPSTAT'98, Professor Roger Payne, Statistics Department IACR-Rothamsted, Harpenden, Herts AL5 2JQ, United Kingdom; fax +44 1582 760 981; email compstat-98@bristol.ac.uk; website <http://www.stats.bris.ac.uk/COMPSTAT/>

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School of Information Science & Technology
Flinders University of South Australia
GPO Box 2100
Adelaide SA 5001

SECTION CHAIRS

Statistics in the Medical Sciences

Dr J. Carlin
Clinical Epidemiology & Biostatistics Unit
Royal Children's Hospital
Flemington Road
Parkville VIC 3052

Statistics in the Biological Sciences

Assoc. Prof. K.E. Basford
Department of Agriculture
University of Queensland
Brisbane QLD 4072

Survey and Management

Ms S. Linacre
Australian Bureau of Statistics
PO Box 10
Belconnen ACT 2616

Statistical Education

Mrs P. Shaw
School of Economics and Financial Studies
Macquarie University NSW 2109

Statistical Computing

Dr G. Stone
CSIRO Mathematical and Information Sciences
Locked Bag 17, North Ryde NSW 2113

Industrial Statistics

Ms T. Dickinson and Dr G. Robinson
CSIRO Mathematical and Information Sciences
Private Bag 10, Clayton VIC 3168

Young Statisticians

Miss V. Wheway
BHP Research
PO Box 202
Port Kembla NSW 2505

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Members are requested to notify their local branch secretaries (see this page of the Newsletter) of change of address, so that Newsletters and Journals can continue to be despatched to them.

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Statistical Society of Australia Inc.
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