

Member Advantage Added Benefits for SSAI Members

Member Advantage and The Statistical Society of Australia, Inc., are pleased to launch an exciting range of high quality, low cost benefits to members of SSAI, with savings facilitated by the combined buying power of the Member Advantage participating organizations.

The benefits available initially to SSAI members are listed on the insert accompanying this Newsletter, and include savings on various forms of insurance, encompassing health, home and contents, income protection, professional indemnity, life, travel and motor vehicle insurance. The professional indemnity insurance packages may be of particular

interest to accredited members. There are also savings on mobile phone plans, rental car club memberships and investment advisory services.

The benefits programme has been established by the Association of Professional Engineers, Scientists and Managers, Australia (APESMA) and is administered through the Member Care Centre. The Centre's professional and experienced team of customer service officers can be accessed by SSAI members nationally through 1300- telephone and facsimile numbers for the cost of a local call. Members also have access to the Member Advantage website.

Over the coming months SSAI will be working with Member Advantage to review the list of benefits available and to respond to and promote members' requests for additional products. Benefits targeting SSAI Accredited Members will be of particularly high priority.

Have a look at the products on offer and start saving! And let us know what products would be of most interest to you in the future.

Subscriptions for 2002

Your subscription notice for 2002 will be posted shortly. If you do not receive it by mid December and would like a new copy please contact Lesley Seiper at ssai@ozemail.com.au to request a replacement.

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Disclaimer

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

Subscriptions

The Newsletter of the Statistical Society of Australia is supplied free to all members of the society. Any others wishing to subscribe to the Newsletter may do so at an annual cost of A\$25.00 for an issue of four numbers.

Advertising

Advertising will be carried in the Newsletter on any matters which the Editors feel are of interest to the members of the Society. For details of advertising rates, etc. contact the Editors at the above addresses.

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**DEADLINE FOR
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Workshop in Tasmania

The Menzies Centre for Population Health Research hosted its third major training program for statisticians and epidemiologists in July. Presenters were Professor Stanley Lemeshow of Ohio State University and Professor David Hosmer Jr of University of Massachusetts. The workshop was titled 'Logistic Regression and Survival Analysis in Epidemiological Research'. There were over 60 participants, with representatives from all states as well as New Zealand.

The course was run over 5 days (16-20 July 2001) at Hobart Vista Hostel. It started with the very basics of hypothesis testing, bias and confidence intervals. By the last day we had covered the advanced topics of multinomial and ordinal logistic regression, and time-varying covariates in survival analysis. Further details of the program are currently available on the Menzies website – just follow the "Training and Employment" link. Lectures went from 8am to 4.30pm each day with computer

labs 7-10pm at night. Participants were able to mix with Stan and Dave during the regular caffeine fixes and the hearty lunch hour.

Many of the participants as well as Stan and Dave went out Thursday night to Rockerfellers down at Salamanca. Some showed real staying power with not getting home till the wee small hours but still backing up for the 8am start.

Course sponsors were Stata Corporation, Survey Design and Analysis Services Pty Ltd, Clinical Oncology Society of Australia Inc and Australasian Faculty of Public Health Medicine.

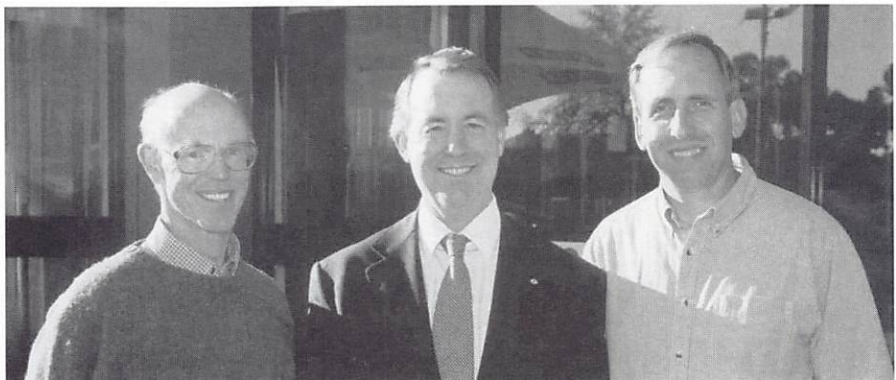
We wish to thank Stan and Dave for their excellent presentations. Somehow they managed to turn potentially dry topics into great entertainment value. The next program will be presented by Dr Kenneth Rothman of Boston University in December 2002.

Jayne Fryer

www.menzies.utas.edu.au



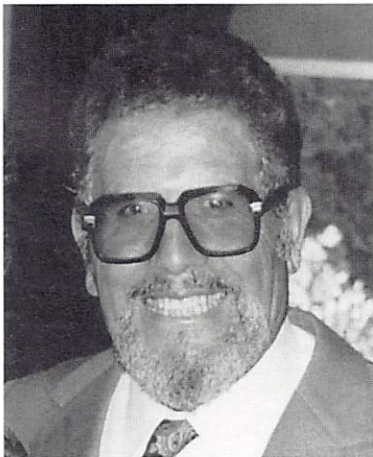
Course participants



Course presenters: Stan (left) and Dave (right) with Prof Terry Dwyer, director of the Menzies Centre (centre).

News about Members

Obituary



Antonino Grassia. 1928 - 2001

We were saddened by the death of our colleague Dr A. (Tony) Grassia, who died peacefully on the evening of 21 May 2001 after a lengthy period of illness. Tony was born on 20 February 1928 and grew up in the Sicilian town of Bronte, on the slopes of Mount Etna. When not at school, he helped his father work on their nearby property where they kept sheep (for cheese making) and grew olives and pistachio nuts. Tony often played jumping over small red-hot lava flows coming down the mountain.

He graduated from the University of Catania as a Doctor of Mathematics and Physics in 1952. Failing to find permanent work he decided to migrate, choosing Australia mainly because a friend had already moved to Perth and could arrange to sponsor him. Despite his inability to speak English and the warning from the emigration department that Australia only wanted labourers, Tony arrived in Western Australia in 1953. He worked as a surveyor's assistant for a year before following his friend to Sydney where good jobs proved equally elusive for both of them. Tony then struck out on his own and moved to Canberra. Here he found work as a handyman attached to the Canberra hospital while he continued the search for better employment.

During the Canberra evenings Tony attended English classes and here he met Mrs Ruth Arndt from the Good Neighbour Council. He mentioned to Mrs Arndt that he had been unable to find work appropriate to his qualifications and was, reluctantly, thinking about returning to Italy.

Now, there is often no adequate substitute for knowing the man who knows, and Mrs. Arndt knew just the man, her husband, who was the Professor of Economics at the ANU. He knew of three unfilled positions for which there were at that time no suitable applicants.

Tony chose to work at the Bureau of Census and Statistics where, with Ken Brewer, he was involved in research into sampling techniques and survey design and analysis. In 1958 he became an Australian citizen and in 1961 graduated with a Bachelor of Arts degree after a course of evening classes at the ANU.

For Tony, 1964 was a very busy year. In February he and Elizabeth were married, in July he left the Bureau to join the CSIRO and in December the family moved to Tasmania where Tony was to provide a senior statistical consulting service to the Divisions of Plant Industry, Food Technology and Fisheries. He worked mainly in the horticultural area, particularly in orchard research, though some of his papers dealt with the preparation and processing of canned baby foods.

In 1970, the family, which by this time included their children Sue and Paul, returned to Canberra where Tony was to ably support George McIntyre and George Dudzinski in the provision of statistical services to the Canberra based CSIRO Divisions. He was also heavily involved with McIntyre in the development of a suite of computer programs that could perform most of the statistical analyses likely to be encountered at that time. In 1976 Tony was transferred to Perth where, as Senior Regional Officer, he led the Western Australian group of the Division of Mathematics and Statistics. Especially there, he is remembered as having been a 'rare and outstanding manager of people'. At this time, the type of research being undertaken was tending away from the randomised block experiment and towards environmental studies, and Tony further developed his interests in spatial statistics and the statistical problems of measurement in natural ecosystems. He published in areas as diverse as wildlife, fisheries, forestry, oceanography, geology and animal behaviour. If any one thing characterised Tony's attitude to research it was that he was never too

busy to listen to someone else's problems.

Tony was always anxious to see the practical side of experiments and was unusually willing to become involved with the physical aspects of field work. He was known for his enthusiastic work with a pick during geological trips and his patience when counting kangaroos in natural woodlands but he sternly refused, when offered, a trip in a small dinghy to examine sea-level oscillations. Retirement, in 1987, was unfortunately associated with deteriorating health and although he remained an honorary research fellow until 1992 he increasingly struggled to meet self-imposed deadlines.

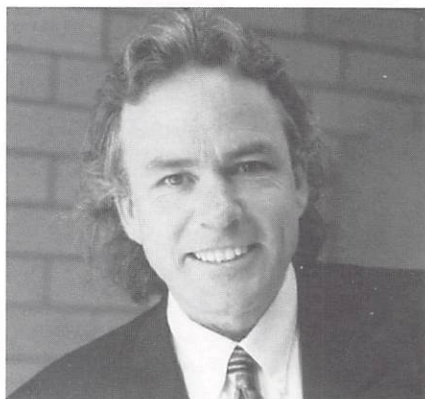
In his spare time Tony made the first decipherment of the Etruscan language and his interpretation of the inscription on the Capua Tile was published in 1973. To achieve this translation he had first to teach himself the Greek language used during the Classical period. Although his enthusiasm for knowledge about the Etruscans never waned, in later years he also read widely on the origins and history of the Celtic races.

Tony was a committed supporter of the Statistical Society of Australia and one of its most colourful characters. He enjoyed both the professional contact at the meetings and the social activities that followed, and regularly encouraged his associates to do likewise. He also believed in continuing education. There are many people who remember Tony gathering together a group to attend the post-graduate talks given by Professor Pat Moran at the ANU, and others who remember a similar group that attended the well known Thursday-afternoon Statistics seminars in the Dept. of Mathematics at the UWA.

Tony was a happy and generous man who loved life and people. He genuinely tried to help those whom he judged to be in need, and was easily distressed at the misfortunes of others. He was particularly sensitive to the loneliness of visitors to the laboratories, and went out of his way to ensure that they were entertained in an appropriate manner. He was a born host and loved entertaining. Above all, he was a good man.

Robin Barron

News about Members



As mentioned in the October 2001 issue of Amstat News, 48 new ASA Fellows were recently recognised for their professional contributions to the field of statistical science. Among them was Simon J. Sheather, Professor at the Australian Graduate School of Management, University of NSW. The award

was made for: fundamental contributions to statistical methodology in nonparametric and robust statistics; for teaching of business statistics; and for editorial service. Congratulations Simon!

Alice Richardson

Accreditation

Accreditation Committee

It is a year since our last update on accreditation. Following the Central Council meeting in July, Nick Fisher left the Accreditation Committee to take up the Presidency of the Society. Nick was a member of the inaugural committee when it was set up four years ago and has been Chair of the Committee for the last two years. Our thanks and appreciation go to Nick for his hard work on accreditation issues during that time. Richard Jarrett has been elected as the next Chair of the Committee, whose other members are:

Siu-Ming Tam,
Australian Bureau of Statistics,

Des Nicholls,
Australian National University,

Annette Dobson,
University of Queensland,

Kaye Basford,
University of Queensland,

Matt Knuiman,
University of Western Australia,

Ian Saunders,
CSIRO Mathematical and
Information Sciences.

Lesley Sieper acts as secretary to the Committee. The Committee meets regularly by teleconference, and was pleased recently with the influx of a number of Graduate Statistician applications.

Professional Development Programs

The first professional development courses were conducted in Canberra in July 2001, hosted by the Australian Bureau of Statistics. The topics (Advanced Consulting Skills, presented by Richard Jarrett and Ian Gordon; and Applied Resampling Methods, presented by Michael Martin and Steven Stern), each had about 30 attendees and were well received. Further courses will be run in conjunction with the Conference in Canberra in July 2002.

Accreditation

At 1 July 2001, we have 120 Accredited Statisticians and 25 Graduate Statisticians. Elsewhere in this Newsletter, you will find some brief descriptions of some recently accredited members. Further information about accreditation, including application forms and a list of accredited members, is now on the Society's website at

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

Further developments

The Committee is currently working on the formal process for re-accreditation since the first of our members were accredited for a 5-year period early in 1998. Recommendations on the process will go to Central Council in February 2002 and should be

publicised to members shortly thereafter.

Richard Jarrett
Chair, Accreditation Committee

Meet some recently accredited SSAI members

Patrick FitzGerald AStat, M-TAG Pty Ltd.

Areas of interest: Medical Statistics, Statistical Computing and Statistical Genetics.

I have been a statistician for 17 years, working mainly in the health/medical field for about 12 years. I have worked mainly for government and academic organisations in WA and NSW during that time, and I have recently joined a private organization which specialises in health economics research and consulting.

Peter Jones AStat, CSIRO, Mathematical and Information Sciences

Areas of Interest: Experimental Design, Fitting Models to Data and Marine Statistics.

On completing a BSc at UNSW in 1969 I began my career as a statistical consultant to biological divisions in CSIRO. Having subsequently graduated with a MSc (UNSW) and PhD(UQ) I gained experience in designing and analysing experiments. More recently I have worked on statistics in the marine and environment areas.

Alexandra Bremner GStat, Murdoch University.

Areas of interest: Medical Statistics, Biostatistics and Applied Statistics.

A decision to change careers from Maths Teacher to Statistician led to the completion of a Graduate Diploma in Applied Statistics and Honours in Mathematics and

Statistics (1999). Currently enrolled in a PhD at Murdoch University and eventually hope to work in Biostatistics or Medical Statistics.

Branch Reports

NEW SOUTH WALES

presents...



Statistical
Squirrel's

Community Service Announcement from Bazza, SSAI NSW Branch Enforcer

Dear Ladies an' Gennelmen, it 'as bin bort to my attenshun dat some of you is not cummin to Statistical Society meetins. Wot, I must arsk wiv respect, do you fink you is doin'? Ere we 'ave a fine an' upstandin' bunch of people tryin' to foster camera cammarard, comara,...frenship between you lot an' to giv' youz a place to meet an' chat as well away from your werk, but 'ardly any of youz come. Wot are dey bovvering for? Over de last few munfs we 'ave 'ad some bleedin' innerestin' torks, but 'ardly anyone shows up.

Now me, when I goes to de torks, I go t'lissen to de Ladies or gennelmen wot is speaking an' to avachat wiv some of me mates dat I don't get to see regular. Some of de time I may not unnerstan wot de geezer at de fron is torking about, but let me tell youz sumfink, when I is down de pub wiv me ovver mates an' we is discussin' real serious like de finer points ov partitioning Pearson's chi-squared statistic for singly ordered two-way contingency tables, then I knowse exactly who ter tork to sort out our disagreements. Some of de geezers may not like bein' innerupted at

'ome on a Saturday night at 2 am, but when me an' my mates 'as got a few bevies unner our belts we need enlightenment dead quick (if youz catch me drift).

Anywayz, I is 'oping that I can see more of youz people at de next few meetin's. Not only will youz get to see some good torks but you'll get de chance to experience a truly magnificent social and educational environment. I 'as got a real rounded educashun I 'as, and I is de envy of all me mates. Youz can be de envy of yours.

Wiv luv an' respect,

Bazza

SSAI NSW Branch Enforcer

Excerpt from the forthcoming hagiography of St Eric, the Brave

...and so it came to pass that in the winter of that year did Brave Eric (as he was then known) approach the learned council. Having toiled mightily and laboured long on his magnificent work, Eric was ready to set forth his motions. But sorely vexed were the learned councillors, for Brave Eric's proposal did rent at the very fabric of all that was good and proper, tearing asunder years of unreciprocated beneficence. Yet fazed not was he, and proceed he did, fearless, valiant, defiant.

Setting forth his motions he did cry, "Continuance of the current prize scheme for honours students is untenable. For too many years hath those institutions of higher learning suckled at the teat of the Society. For too many years hath our wealth supported bequests that see little or no good returning to us. It is time, my learned friends, to end once and for all this system of scholarship and replace it with something that better reflects the needs of our mighty Society. To this end, I set forth the following motions".

Unscrolling his lengthy parchment, Brave Eric read aloud the changes he foresaw for the Society. "I speaketh to thee today, beloved ladies and gentlemen, with a motion for the abolition of monetary prizes awarded to Honours students. Instead, I propose that recognition of all students at this level occur, not just the best. I submit to thee also, that the interests of our Society are better served by continuing the fine tradition of the PostGraduate Awards Day and rewarding excellence in research".

And amazed were the learned councillors for they saw the sense spoken by Brave Eric. Why indeed should the Society recognise only a handful of students? And in these times of dwindling numbers of research students, why not reward those undertaking these difficult challenges? After all, the innovation of Sir Frederick of Osman, the PostGraduate Awards Day, had been successful the previous year.

Rapturous was the applause, loud the voices shouting "Hurrah, hurrah". For this was no ordinary motion. This was bold, visionary work, destined to place its originator amongst the best and brightest the land had ever seen. Amidst the tumult, the flag waving and cheering the councillors did vote, unanimous in their thought on the greatness of Brave Eric's work.

And humbly looking on, Brave Eric, known to some as Mr Beh, considered his work done. Stealing away quietly he considered where next to apply his great and prodigious talents...

Behind the Closed Doors of the Australian Television Measurement

Hello all, the Squirrel again. July saw us trundling off to the newly appointed offices of AC Nielsen,

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ready to marvel at the wonders of Australian Television Measurement. The council meeting prior to the talk revealed many wonderful things, primarily Andrew Collins luvverly skull. For some reason he'd felt the need to remove all of the hair from his head, a feat that bought much amusement to the Council. Some people will do anything for attention.

The talk was presented by Iwona Chrzaszcz, Director of Media Statistics at AC Nielsen (ACN). Prior to starting her talk Iwona claimed that "all people at ACN have equally difficult names, Jenny Kelly is an outlier". If most people were like this little squirrel, they were figuring out how to help that poor lonely vowel in her surname.

Iwona's talk covered the history of ACN and broadcast measurement, from 1936 to the present day. Iwona also covered the reasons behind why ratings exist and the who and what of TAM (an acronym whose meaning I forgot to record, but I think it is Target Audience Measurement), covering sample design and sample variability issues and many other things. Those other things were not recorded by this squirrel because Iwona set a blistering pace in her talk – 36 slides in 28 minutes. A bumper crowd managed to round out the talk nicely by asking questions for 25 minutes. Phew!

Finding Forrester

...was easy at the August meeting, as Bob (Forrester) himself gave the talk (not to be confused with the Sean Connery film of earlier this year, about a man who can't find his car (a Subaru) which in turn is not to be confused with the film "Dude, Where's My Car?", although this squirrel is now confused and hopes that you are not).

Actually, Bob came to speak on "Consulting in the Biological Sciences – Then and Now". Using his 30 (count 'em) years at CSIRO as his inspiration, Bob took a nostalgic look back at the whys and wherefores of consulting in the good ol' days.

1970. A year after man landed on the moon. The summer of love was three years gone. War still raged in

Vietnam and flares were considered fashionable. Gough Whitlam had yet to be elected Prime Minister. Glam rock was in full swing, punk many years away. A year of many abiding memories (for some, not me, I wasn't born). The year in which Bob started at CSIRO.

Recalling his early experiences, Bob recounted many of the challenges faced then and contrasted them to the challenges faced now. Graphs were done by hand, if done at all and diagnostic plots were unheard of. Communication was generally face to face and STD was expensive (that's what you get for working for the Government). Not for them the joys of videoconferencing with colleagues in the depths of the US heartland!

Bob moved on, discussing the milestones in his career and the advancements in statistics in the biological sciences. Nelder and Wedderburn drew the most attention, with an honourable mention to our own G. N. Wilkinson. Bob then discussed some work he'd done on species richness and expressed sequence tags in plant genome research. The highlight was definitely his discussion of the Goodman, Jackknife and Odd Shlosser estimates. Never has statistics been so much fun.

The evening culminated in a rowdy, raucous dinner at a local pizzeria, the assembled crowd treated to more of Bob's life story. That's it from me. Till next time...

Statistical Squirrel

VICTORIA

The Victorian Branch has set membership fees for 2002. There will be no increase in fees for ordinary members, and fees for student members and retiring members have been reduced from the 2001 level of \$55 (and \$45 for early-bird payments) to a rate of \$40. Branch council agreed on reducing fees for these members to a bare minimum (i.e. just covering the capitation costs charged by central council for services such as the Journal subscription) in order to encourage more students to join the

Society, and to give retired members some relief from fee increases in recent years (caused by the GST and rises in Journal costs).

The monthly meetings at Swinburne University continue to be well-attended. Reviews of recent talks at the monthly meetings follow.

Simple Things have Elementary Demonstrations.

Dr Rodney Carr of Deakin University gave a very entertaining and instructive talk entitled "Simple Things have Elementary Demonstrations" to the meeting of the SSAV at Swinburne on Tuesday 24 July.

He said that people who had studied statistics courses commonly asked him questions such as 'Please analyse this data', 'What test do I use?' and 'Is this result significant?', indicating to him that we as statistics teachers must be doing something wrong. We tend to 'teach to tools and techniques' and emphasise formulas which our students have little hope of understanding.

His message was that with tools such as Microsoft Excel at our disposal (and, which should not be overlooked, at the disposal of most of our students) we could correct these pedagogical errors by concentrating on demonstrations instead of formulas. To illustrate, he took us on a mini-guided-tour of parts of his Microsoft Powerpoint-mounted suite of demonstrations of statistical concepts. These demonstrations, better described as animations, were based on easily accessible but little used capabilities of the spreadsheet program. A sliding scroll bar, for example, was used to dynamically change the shape of a histogram and simultaneously observe the effect on the mean and the median, illustrating the concept of the robustness of the latter.

To show how easy it is to invent such demonstrations, he built one from scratch before our very eyes in 10 minutes. This was used to show the effects on a normal PP-plot of changing the skew and kurtosis of a distribution. While many of us were somewhat dazzled, we had to admit

that it was at least possible to do such a thing.

There was no doubting the power of the demonstrations to bring statistical ideas to life. To try them for yourself, point your web browser at www.man.deakin.edu.au/rodneyc/PS1.zip. Our thanks go to Rod for making the trip from Warrnambool to instruct us so entertainingly.

John Taffe

Adjusting for quality in a meta-analysis.

Professor Kerrie Mengersen of Newcastle University delivered a very interesting talk to the August meeting on methods of taking account for quality measures of studies contributing to a meta-analysis, managing to cover an impressive amount of information within the one hour talk.

A meta-analysis involves combining the results of two or more separate studies or sources of data for the same problem in order to reach a global conclusion as to the presence of an effect or relationship within the data. Kerrie gave a few examples of meta-analyses she had been involved with – the effect of passive smoking in non-smokers married to smokers, combining satellite data and ground measurement data for the mapping of large areas of eucalypt, and combining expert opinion and directly measured data relating to rare and endangered species.

Kerrie started by considering the passive smoking data. Here, several studies have been conducted, and Kerrie displayed a diagram of the confidence intervals for the log odds ratio. Most of these confidence intervals crossed zero, indicating that the individual studies were not able to conclude that an effect was present. How can the studies be combined within a meta-analysis? Kerrie suggested two models for doing this. The first was a random effects normal model, where the log odds ratio for the i^{th} study is assumed to be normally distributed with mean θ_i and variance σ_i^2 , and θ_i in turn is assumed to be normally

distributed with mean μ and variance τ_i^2 . The second was a random effects logistic-t model. Here a separate log odds ratio is calculated for each of j groups within the i^{th} study. These log odds ratios are then linearly modelled as $\log \text{odds} = \theta_i + \phi_j + z_{ij}$. θ_i and z_{ij} are assumed to have t distributions, while ϕ_j is given a uniform distribution. In the case of the passive smoking data, both models gave similar results.

Kerrie then demonstrated how the logistic-t model could be modified to take account of a quality measure – the estimated probability of misclassification of smokers. The observed variable y used in the calculation of the log odds ratio is now assumed to follow a $\text{Bin}(n_i, r_i)$ distribution, with $r_i = \sum \alpha_{ij} p_j$, where α_{ij} represent the probability of misclassification.

The second example given was a particle filter. The problem is to estimate a distribution for a parameter θ based on a large population of N observations. The particle filter operates by making an initial estimate of θ using a small sample of n observations, and then continually updating the estimate using an additional p observations. The additional observations are selected using importance sampling, that takes account of a quality measure assigned to each observation. At time t the process is stopped, and the results used to estimate a distribution for θ . Kerrie noted that it can be difficult to assess when convergence has been achieved.

The final example was measurement error modelling. Here a response variable, e.g. the presence of a disease, is assumed to be related to a series of risk factors. Some risk factors, C , can be directly measured, while others, referred to as unknown factors, X , cannot be directly measured, but rather are assessed via surrogate measures, Z . Three models must be considered – a disease model that relates disease status Y to the risk factors X and C ; a measurement error model that relates Z to X ; and an exposure model that explains the distribution

of X within the population. Typically, there is only a small set of data available for fitting the measurement error model, as typically X is very expensive or difficult to collect.

An application of this technique is mapping large areas of eucalypt. The "X" data in this instance is high-quality ground measurement data, and the "Z" data is low-cost and readily available satellite data. The question is can the satellite data be used to improve the identification of large areas of eucalypt, and reduce the amount of costly ground measurement data required? In this example a measurement error model was able to be used to incorporate the satellite data and reduce the reliance on ground measurement data.

Bruce Fraser

Statistical Methods for Car Safety Rating by Make and Model: An International Comparison.

Professor Max Cameron of Monash University Research Centre has worked in the area of road safety since 1965. He is now an Adjunct Professor at the Monash University Accident Research Centre (MUARC).

He spoke about work joint with Stuart Newstead and others on the analysis of road crash data, primarily looking at the "crashworthiness" and "aggressivity" of various makes and models of passenger cars.

The crashworthiness of a car is a measure of how likely it is that the driver of that car will be injured if that car is involved in a crash. The aggressivity of a car is a measure of the likelihood of injury to occupants of other vehicles if a two-car collision occurs. Vehicle mass has a large effect on both crashworthiness and aggressivity, with occupants of heavier vehicles having fewer injuries than occupants of light vehicles, but the two concepts are different.

Logistic regression models are often fitted to data on hundreds of

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thousands of road accidents, with terms being fitted for driver age, driver sex, speed limit at the location and number of vehicles involved as well as the makes and models of the vehicles. The resulting estimates of the effects of makes and models of vehicles are made public by MUARC, with efforts being made to communicate confidence intervals for the estimates, not just point estimates. The sponsors of the research (which do not include car companies) tend to be less circumspect in publications called Used Car Safety Ratings brochures.

One major issue is that some jurisdictions, such as NSW and Queensland, have reasonable quality data on crashes in which no person was injured. Other jurisdictions, such as Victoria, only have consistent data on crashes in which someone was injured or killed. Unless there is data about vehicle-damage-only crashes (so that the total numbers of crashes are available as denominators for each type of vehicle), it is very difficult to obtain independent estimates of crashworthiness and aggressivity. This may have resulted in high-aggressivity vehicles such as four-wheel drives and passenger vans (especially with front bull bars) tending to be ranked as crashworthy because their occupants suffer fewer injuries than the vehicles which they impact.

There were a lot of questions at the end of the talk, partly because the topic was one that we all have opinions about. Some of the issues that I remember are as follows.

- Data on the speeds of vehicles before the crashes is not available, so speed limits are used instead. This may not be as good an approximation for all makes of car. This is a source of uncertainty which is not considered in the confidence intervals.
- Conclusions from analysis of road crash data are more consistent with measurements on dummies in barriers crash tests like those in the New Car Assessment Program when the crash tests are offset rather than head-on. Side impact crash tests

seem to be even more relevant to actual road crash data.

- In crashes, females are more likely to be injured than males. However, if they are injured then males are more likely to be seriously injured. And as a proportion of people injured, those with high blood alcohol are more likely to die.
- Cars have become substantially more crashworthy over the last thirty years.
- In the near future, as better estimates of factors affecting vehicle aggressivity become available, it is likely that regulations will be enacted to get a balance between crashworthiness and aggressivity which is in the public interest. Four wheel drive vehicles with bull bars in suburbia might be regarded as increasing the risk to others by more than the risk to their occupants is decreased.

Geoff Robinson

SOUTH AUSTRALIA

New appointment at UniSA

The Statistics Group at the University of South Australia recently welcomed Dr Zen Lu as a new lecturing colleague. Zen came from the Department of Economics and Business Statistics at Monash University, where he recently obtained his PhD. He has a number of research interests, including Mixture Models in Binary Logistic Regression. Zen is a welcome addition both to the UniSA group, and to the Adelaide statistical scene in general.

Inaugural E.A. Cornish Lecture held in Adelaide

The Statistical Society of Australia, South Australian Branch, has decided to inaugurate a series of public lectures on statistical topics of broad interest. The lecture series has been named to commemorate Alf Cornish, a leading figure in the early years of the statistical profession in Adelaide. The lectures will be held biennially and will be presented by

eminent statisticians from around the world.

The inaugural lecture in the series was presented on 19 September 2001 by Professor Terry Speed of the Walter and Eliza Hall Institute of Medical Research and the Department of Statistics, Berkeley, on the subject of 'Gene Expression'.

Background to the lecture series: EDMUND ALFRED CORNISH 1909-1973

Edmund Alfred Cornish was a leading figure in the development of the strong tradition of statistics in Adelaide. Starting from an interest in statistics that developed while he was working as an agrostologist (specialist in grasses) at the Waite Research Institute, he developed his knowledge and skills studying with R.A. Fisher. In 1940, he was appointed as Officer-in-Charge of the Biometric Section of the Council for Scientific and Industrial Research (CSIR, now CSIRO) which subsequently became the Division of Mathematical Statistics (DMS), with Cornish as its first Chief. Under his leadership DMS grew to 50 staff at his death in 1973. During the late 1950's, the University of Adelaide had become aware of the importance of mathematical statistics and appointed Cornish as Foundation Professor of Mathematical Statistics at the University of Adelaide from 1960 until 1965, when his former student Alan James returned from Yale to take over the role.

His contributions to statistics and the profession were broad and of considerable significance for the development of statistics in Australia. He was a Fellow of the Australian Institute of Agricultural Science, an Honorary Fellow of the Royal Statistical Society and a Fellow of the Australian Academy of Science. He also served as President of the Biometric Society both in the Australasian Region and at the international level.

Alf Cornish laid the foundations for the strong tradition of experimental and theoretical statistics in Adelaide and it is fitting that his name should be associated with a series that will

bring eminent statisticians to Adelaide to support the ongoing strength of the statistical profession here.

The inaugural lecture: Terry Speed on Gene Expression

A record number of 52 people attended the inaugural EA Cornish lecture, which was fortunately held at a larger-than-usual venue. Terry Speed was an appropriate speaker, since his interests and career had something in common with Cornish - notably both were Chiefs of DMS and they shared interests in cumulants, recovery of inter-block information and in fiducial methods.

The topic was the statistical challenges that have resulted from the deluge of data from the new technologies that are becoming commonplace in biology. Data generation is more like an industrial process than a traditional laboratory experiment. Sophisticated instruments allowing high throughput, such as cDNA Microarrays, have brought their own statistical problems. Apart from the volume of data, there are issues of systematic effects, biases and measurement error that have to be addressed if the results are to have any meaning. When these have been solved, the vast number of parallel measurements raises problems of statistical significance.

Terry started with a guide to genomics for the biologically illiterate. In particular he explained the 'c' in cDNA: the genes, which are the active part of the chromosomes, produce 'messenger RNA' or mRNA which carries the complementary pattern to the DNA of the gene. Clever scientists can collect the mRNA and use it to produce DNA, complementary to the RNA - hence cDNA - which is therefore a copy of the original gene. The cDNA for several thousand genes can be spotted onto a microscope slide. mRNA from an organism can then be tagged with a fluorescent dye and washed over the slide. If the mRNA corresponding to one of the genes is present, it will attach to that

cDNA spot causing it to glow under UV. Thus it is possible to tell which genes are 'expressed', that is, producing mRNA. In fact the current level of technology only allows relative measurements, so two different lots of mRNA are compared, one tagged with green dye and one with red. The green/red ratio is used to identify which genes are 'differentially expressed' between the two experiments.

Of course, nothing is simple. Systematic effects across slides occur and the sensitivity of the detectors for red and green is not linear across different intensities. However, Terry and his team - with some involvement from CSIRO - have made substantial progress in solving these statistical problems, so that much greater confidence in the results is now possible.

Typical statistical issues are also relevant even in the brave new world of high throughput biology. Terry described an experiment on the mouse olfactory bulb, where an intended experiment placed too much emphasis on the controls, which were of little intrinsic interest. A properly designed experiment with more emphasis on comparisons between treatments gave much greater efficiency. Terry also emphasised the need for replication and the unlikelihood of finding useful results from a single-slide experiment.

There was considerable discussion, both from Society members and from the numerous biologists who had been enticed along. The issues of experimental design are clearly still controversial and more work remains to be done - demanding the close collaboration between the scientist and the statistician that is the major driver for statistical development.

Ian Saunders

*CSIRO Mathematical and Information
Sciences
Vice-President, South Australian
Branch*

WA

Statistics, Crime, and the Crime Research Centre.

At our August meeting Frank Morgan, Director of the Crime Research Centre at the University of Western Australia described the role of the Centre which was established in 1989 by Professor Richard Harding. The Centre produces crime and justice statistics for Western Australia, engages in criminological research and teaches courses at undergraduate and postgraduate level.

With the assistance of Ross Maller of the UWA Maths Department, the Centre was a pioneer in introducing survival analysis to the study of recidivism (repeat offending). This technique naturally extends to repeat victimisation, an analysis of which has led to some highly promising approaches to crime prevention. The sort of data used for recidivism statistics is naturally left censored as it presumes the criminal has actually been arrested for his first offence, and then right censored, with limited follow-up time to track subsequent offences. It is rare for the burglar to own up to police and provide useful data. Although the police estimate that only 10% of burglaries lead to a conviction, more than 70% of the victims will notify police. This means that victimisation data is therefore more complete than offending data, and of better quality.

Canadian statistics showed that 21% of burglaries were repeats, and research in England has shown that 44% of crime is concentrated on 4% of the victims. Some studies show that being a repeat victim may be a surrogate for something else, whether it be type of house or suburb which looks to be a "good bet" for the burglar. This leads to this victim being a poor risk and thus there is risk heterogeneity across the population which must be modelled. Other studies indicate that being a victim changes the landscape for subsequent risk and that the first victimisation may influence a burglar to return and commit further offences. Both explanations may have validity so

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'flag' and 'boost' explanations may co-exist.

The Crime Research Centre attempts to focus interventions for crime prevention by plotting hazards for repeat offences. In some Perth suburbs, this takes the form of a step function for the first month then is fairly stable thereafter. Statistical techniques used in analysis of crime research data were logistic regression, time series, categorical modeling and survival analysis.

This interesting presentation certainly showed that crime generated plenty of statistics.

Recent developments in nonparametric and semiparametric methods in nonlinear time series:

A selective review

Dr Jiti Gao, Department of Mathematics and Statistics at UWA spoke at the September meeting of the Branch. In the last ten years there has been increasing interest and activity in the general area of nonparametric and semiparametric methods in nonlinear time series analysis. Many methods and models have been proposed and studied extensively. The emphasis of the talk was a brief description of the main developments in this area rather than on the mathematical detail, with a particular focus on the applications in econometrics, finance, environmetrics and climatology.

In the first part of his presentation our speaker discussed how to choose the best possible model from parametric, semiparametric and nonparametric regression models. Various model selection criteria were proposed. In the second part he discussed a nonparametric series estimation procedure for additive nonparametric and semiparametric time series models. Then he presented a general model specification testing procedure for additivity, linearity and nonparametric significance. The proposed estimation and testing procedures were implemented using simulated and real data sets from

economics, finance, fisheries and climatology.

Finally, some extensions to both the nonstationary and long-range dependence cases were presented. A copy of the slides used for the talk can be obtained from the speaker.

labour surveys in the ABS - I.E. What does the WA office produce?

Helen Teasdale of the Statistical Support Unit of the Australian Bureau of Statistics WA Office spoke at the October 9th meeting of the WA Branch. She gave an informative talk describing some of the activities carried out by the WA Office of ABS. The ABS economic collections are spread across the state offices, grouped according to the type of data collected. The WA Office is responsible for the Labour Surveys. Helen focused on these, including the Survey of Employment and Earnings, the Survey of Average Weekly Earnings, the Job Vacancy Survey and the Labour Price Index, all of which primarily collect and publish statistics relating to the Australian labour market.

The Survey of Average Weekly Earnings has a sample of 4,800 businesses (mail survey) and collects information for the middle month of each quarter. An estimate of the average wages and salaries paid are split by sex and full time and part time workers, amongst other things, in the publication. There is the Survey of Employment and Earnings which is also a mail survey of 11,000 businesses, which collects total wages and salaries for the whole of the reference quarter. Data collected are used in the compilation of the National Accounts. Also there is a Job Vacancy Survey which is a telephone survey collecting the number of job vacancies available on a particular day. The other regular quarterly collection is the Labour Price Index, which she noted was quite different and complex.

On a day to day basis members of the Statistical Support Unit perform ad

hoc analysis, such as looking at data, to see what changes there are across quarters and what reasons could be for such changes. There is also a fair amount of project work investigating techniques, which could result in the surveys being more efficient and more accurate.

Helen described "Significance Editing" which involves prioritising those units to be edited, which is the process of checking the data before it is accepted. If a unit fails an edit it will need to be recontacted and the reported data verified. Significance editing determines those units that should be recontacted by estimating how big the impact on the final estimate will be if the reported data were changed. Helen described how they would score edits, e.g. High (Important) Low (Didn't need to edit this unit). A unit can fail more than one edit. They would then take the maximum score (all scores scaled). Significance Editing would mean that only units giving significant edits are edited and the remaining units left unchanged.

After giving a brief example Helen informed us that this procedure was used in SEE, EEH, AWE (As she explained the ABS loves acronyms!). It was introduced into EEH in 2000 and SEE in 1999, and much earlier into AWE in 1992. To determine if the procedure would result in a more efficient survey process, a clean file was used in estimation compared with an unedited file, which had the significance editing process applied. This showed very little change in the final estimates but revealed that there could be a saving of almost 50% of time on editing. New methodology such as this usually requires Statistical Support Unit involvement for around two quarters after which time it becomes usual practice.

Helen then talked about Priority Intensive Follow Up. Intensive Follow Up (IFU) is the process the ABS uses to ensure that respondents return their completed survey forms, and involves both telephone and mail contact. Priority IFU is used to prioritise those units to be targeted for intensive follow up, and those

that will just receive a reminder letter (i.e. less intensive follow up). Each outstanding respondent is given a score based on their significance, which is determined by how well the unit's data can be imputed. She explained the Error of Imputation that measures the change in estimates of imputing a respondent's data, which they calculate for the most recent quarter in which the unit responded. This is matched to a decile table to give a score of 1 to 10.

If they have no way of determining the accuracy of the impute a score of 10 is given (for units new to the survey for example). Also if there were "recalcitrants" (no response for 5-6 quarters before) they were given a score of 10. Units with low scores would receive a reminder letter only, while units with high scores were subjected to intensive followup. This approach had been implemented into SEE in 2000 and investigations are currently underway to implement it into AWE.

Helen went on to talk about the Labour Price Index which measures the quarterly change in wages and salaries for which information is collected from approximately 19000 selected jobs.

Information such as hourly rates of pay, ordinary pays, bonuses, and commissions are collected. Helen explained the Rotating Panel Methodology which balances respondent burden with quality of the index. This led onto weighting and actual formulae for Index Calculations, and a measure of Variance of LPI which used the balanced repeated replication method. Helen also mentioned the Non Wage Cost Index, where they will collect non-wage items such as superannuation and leave payments, which is still in the development stage.

Helen fielded questions regarding births and deaths of businesses from the survey frame, whether or not they followed jobs rather than people in the Labour Price Index, the need to review classifications such as with the relatively new IT industry, and

whether or not court action was necessary to get a response. She was also questioned about methods used to identify outliers, and replied that this was generally a survey specific process.

Brenton Clarke

CANBERRA

Estimation for spatial and spatio-temporal models

Dr Qiwei Yao from the London School of Economics, gave a presentation at the branch's late July meeting. Unfortunately, I could not attend. My apologies for not reporting this talk.

Transform shrinkage, threshold selection and Empirical Bayes

At the end of August, the Canberra branch enjoyed an interesting talk given by Professor Iain Johnstone from Stanford University about a joint work with Professor Bernard Silverman. Iain pointed out that in statistical signal and image processing it is important to de-noise a signal without smoothing away important sharp features.

He showed that wavelet and transform shrinkage is a fast method for de-noising and deconvolution with attractive properties. He also explained that processing by blocks creates more homogeneous groups and the variances are block dependent. He gave an example to show that thresholds matter in correlated data and it can be desirable to choose thresholds from data.

Finally, he concluded that a simple sparse prior information model is not perfect, but good in simplicity/fidelity tradeoff and fast with good theoretical and simulation support. The method of transform shrinkage can also be extended to de-noising for ridgelets, curvelets, etc and software will be available at www.stat.stanford.edu/~imj.

ABS analytical products and analytical capability

On September 25, Ken Tallis presented a very interesting talk to the Canberra branch. Ken is in charge

of the Analysis Branch in the Australian Bureau of Statistics. He talked about the analytical products and analytical capabilities of a national statistical agency like the ABS.

Ken said that in a national statistical agency there are "stimuli" like changing user demand, budget pressures, changing data environment and emerging methods and technologies, and these stimuli generate responses like domain-wide view of statistical needs and products, exploiting by-product data, targeted collection activity plus modelling on other datasets and developing "analytical products".

He mentioned that it is necessary to consider and combine different styles of analytical work. The styles of work are new measures of socioeconomic concepts like human capital and spatial price indexes, statistics for small domains, exploiting novel datasets and drawing statistical threads together.

He also said that in analytical work there are issues like identifying the relative importance of proposed problems or methods, understanding how to translate research into a statistical product and finding the balance between state of the art sophistication and practicality in any given job.

Finally, he said that in building analytical capacity it is necessary to identify emerging analytical problem classes and strategies for analysts and methods. In the analytical problem classes Ken mentioned longitudinal analyses of quasi-longitudinal datasets multilevel analyses, analyses that take in account complex collection design, melding multiple datasets and analysing huge datasets.

News at the Canberra Branch

In June we said goodbye to Melissa Dobbie who moved to Vancouver, Canada. Melissa left Canberra to take a Teaching Postdoctoral Fellowship in the Department of Statistics at the University of British Columbia. Good luck in your new position Melissa.

Veronica Rodriguez

Australasian Conferences

CONFERENCE SUMMARY

International Conference on Statistics, Combinatorics and Related Areas and The Eighth International Conference of the Forum for Interdisciplinary Mathematics.

19 – 21 December, 2001, University of Wollongong, Australia

Information:

<http://www.uow.edu.au/informat/ics/maths/statconference>

Eighth Summer Workshop, New Zealand Mathematics Research Institute,

6 – 11 January 2002, Masonic Hotel, Napier, New Zealand

The workshop is co-sponsored by the ISI's Committee on Probability and Statistics in the Physical Sciences.

Information:

E-mail napier@stat.auckland.ac.nz, or visit webpage <http://www.stat.auckland.ac.nz/napier2002/>.

Overseas Conferences

ProbaStat 2002, Fourth International Conference on Mathematical Statistics

4-8 February 2002, Smolenice, Slovakia

Information: C/- ProbaStat 2002, Mathematical Institute of the SAS, Stefanikova 49, SK-81473 Bratislava, Slovak Republic; Fax (+4217) 5239-7316; e-mail: probastat@savba.sk

7th Valencia International Meeting on Bayesian Statistics

2-6 June 2002, Canary Islands, Spain.

Information and updates at conference web site,

<http://www.uv.es/valencia7/>, and its US mirror site, <http://www.stat.duke.edu/valencia7>

Hawaii International Conference on Statistics

5 – 9 June 2002, Sheraton Waikiki Hotel, Honolulu Hawaii, USA.

Sponsored by: University of Hawaii – West Oahu; and College of Tropical Agriculture and Human Resources-University of Hawaii.

16th Australian Statistical Conference,

8-11 July 2002, National Convention Centre, Canberra.

The themes will be bioinformatics, surveys, design of experiments and trials, medical statistics, financial statistics. A tribute to Richard Tweedie will also be given.

Information :

www.statsoc.org.au/asc16

Enquiries asc16@con-sol.com

Australasian Genstat Conference 2002,

4 – 6 December, 2002, Abbey Beach Resort, Busselton, Western Australia

Information:

<http://www.agric.wa.gov.au/biometrics/genstat2002> or email genstat2002@agric.wa.gov.au

Web address:

<http://www.statistics.hawaii.edu>

Email address: stats@hawaii.edu

22nd International Symposium on Forecasting

23-26 June 2002, Department of Statistics, Trinity College, Dublin, Ireland.

Information: www.isf2002.org

The Sixth International Conference on Teaching Statistics, ICOTS-6

7-12 July 2002, Durban, South Africa.

Theme: 'Developing a statistically literate society'

Organised by the International Association for Statistical Education (IASE) and the South African Statistical Association (SASA).

Option of full refereeing of papers.

Proposals invited for contributed papers and posters.

Information: Brian Phillips, E-mail bphillips@swin.edu.au or see website <http://www.beeri.org.il/icots6/>

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