statistical society of australia incorporated

SSAI newsletter

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New Year's Honours for Professor Chris Heyde

In the 2003 New Year's Honours, Professor Chris Heyde was awarded Membership of the Order of Australia (AM). Such awards are not lightly offered: they are intended to recognize the Member's contribution to Australian society. Chris has undoubtedly given much to this country: a brief account of his contributions (apart from his well known research) follows.

Chris was born in Sydney on 20 April 1939, and went to school at Barker College, Hornsby, where a gifted schoolteacher sparked his interest in mathematics. After leaving school, he enrolled at the University of Sydney, graduating with a First Class Honours degree in Mathematics in 1961, and receiving the University Medal. He won a Commonwealth Postgraduate Research Scholarship to the Australian National University (ANU), and earned his PhD in Statistics from Pat Moran's Department in 1965. He married Elizabeth James later that year; they have two sons Neil and Eric. Chris' first job was as an Assistant Professor at Michigan State University in 1964-5; in 1965 he moved to Sheffield and later Manchester, where he was appointed Special Lecturer in charge of the Statistical Laboratory in 1967. He returned to Australia in 1968 as a Reader in Ted Hannan's Department of Statistics at the ANU.

Chris and his wife Dr Beth Heyde in the grounds of Government House following the award ceremony.

In 1975, he joined Joe Gani in the CSIRO Division of Mathematics and Statistics (DMS), first as a Senior Principal Research Scientist, and then as Chief Research Scientist and Assistant Chief of the Division from 1977. He was instrumental in carrying out many of the modernizing changes which enhanced DMS's international renown. In 1981, when Joe left DMS, Chris continued his work as Acting Chief of the Division, until his appointment to the Chair of Statistics at the University of Melbourne in 1983. He returned to the ANU in 1986 as Professor and Head of the Department of Statistics in the Institute of Advanced Studies. He served as Foundation Dean of the School of Mathematical Sciences for three years from 1989, and is currently Professor in the ANU's Mathematical Sciences Institute (the School's new name). Since 1993, he has also served for the first semester each year as Professor in the Department of Statistics at Columbia University, New York, where he is the Director

In this issue

SSAI

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DEADLINE FOR NEXT ISSUE: 20 JULY 2003

Honours for Chris Heyde

of the Columbia Center for Applied Probability.

Throughout his career, Chris has taken a serious interest in the history and development of Mathematics, Statistics and more generally Science in Australia. He has written a book on Bienayme with Eugene Seneta, and co-edited "Statisticians of the Centuries" with him. He was elected to Fellowship of the Australian Academy of Science in 1977, and has since served it in various capacities: he was a member of the Sectional Committee 1 for Mathematics in 1978-82 (Chairman 1980-82), a Council Member in 1986-93, Vice-President in 1988-89 and Treasurer in 1989-93. He was Chairman of the Executive Committee of the Australian Foundation for Science in 1990-92, and has since been a Director of this Foundation.

The Australian Mathematical Society (AMS), the Statistical Society of Australia (SSA) and the International Statistical Institute (ISI) owe much to his endeavours. He served as a member of the AMS Council in 1980-83, and was Vice-President in 1981. He was Vice-President of the ISI in 1985-87 and again in 1993-95; he was also a member of the ISI's Bernoulli Society Council in 1979-87, its President Elect in 1983-85, and its President in 1985-87. He was a member of the SSA's Canberra Branch Council in 1973-83, and again in 1987-89, becoming its Branch President in 1977-79. While at the University of Melbourne, he was a member of the SSA's Victorian Branch Council in 1984-86, and Branch President in 1985-86. He was a member of the SSA's Central Council in 1973-86, and the Society's President in 1979-81. He has been a member of the Australian Mathematics Competition Board since 1981, and an active member of the Board of the Australian Mathematics Trust since 1992.

Chris has organized a large number of important conferences, among them the 8th Conference for Stochastic Processes and their Applications and the 4th Australian Statistical Conference in Canberra in 1978, the Bicentennial National Mathematical Sciences Congress in 1988, the Australian Academy of Science Symposium on the Role of Mathematics in Science in 1990, and the annual Applied Probability Day Conferences at Columbia University. He has been involved in many other conferences, which are omitted only for reasons of space.

Chris has also contributed a great deal to Australian and international journals through his broad editorial expertise. As Associate Editor of the J.Aust.Math.Soc., he was responsible for probability and statistics submissions to the journal in 1972-74. He was Editor of the Aust.J.Statist. in 1973-78, and Associate Editor of Ann.Probab. in 1974-78, Maths.Operat.Res. in 1976-90, ISI Review in 1980-87, Adv.Appl. Prob. in 1972-82, and Stoch.Proc.Applns in 1972-82. He has been one of the Editors of Math.Scientist since 1982, Coordinating Editor for J.Appl.Prob. and Adv.Appl.Prob. in 1982-89, and Editor-in-Chief of both these journals since 1990. He has also been one of the Editors of the Springer Series in Probability and its Applications since 1985. His high standards and fair-minded approach to authors' submissions have earned him the respect of all professional colleagues in Australia and overseas.

Throughout his career, Chris has altruistically devoted much of his time to his colleagues, to the various Societies to which he belongs, and more generally to the development of Mathematics and Statistics in Australia and internationally. I believe that it is for this continuing dedication to his ideals that he was awarded his AM. All of his colleagues congratulate him most warmly on this well merited award: they are proud to have so selfless a colleague for a friend.

Joe Gani
Australian National University

Editorial

The Editors are delighted to feature Chris Heyde's Australia Day medal in this issue of the newsletter. The Statistical Society has of course got its own system for recognising contributions, including service awards and honorary life membership. It is great news when such contributions are recognised by the general community as well.

Last issue we wrote in the "website of the month" about the website of this newsletter, which currently has one pdf version of a previous newsletter. The Editors hope to expand this collection in the next few months. While we were researching this issue, it came to our attention that the New Zealand Statistical Society (NZSA) has an online version of its newsletter as well as the hard copy. The Editor, Roger Littlejohn, explains the benefits of this system. "It doesn't have space & format constraints; it can carry submissions that come in after the deadline; it contains live hyperlinks that have been checked; it can sustain a dynamic debate (issue 57 online has correspondence on "NZ needs maths graduates"); if someone sends in an excess of material I can abstract it in the hardcopy & refer to the online version; and I keep in practice at web programming and enjoy writing it. One could argue as a downside that it's accessible to non-members, but one could also argue that as an upside!" As the NZSA Newsletter appears but twice a year, there are also benefits in the timeliness of the content of the newsletter.

We are not planning to follow this route at the moment, as a recent survey of SSA members suggested a strong desire to settle down with a paper copy of the newsletter over a cup of coffee four times a year. Has your view on this issue changed recently? We'd love to hear from you. Please write or send email to the Editors at the addresses on page 2.

The SSAI Newsletter Editors.

Finally, the editors are interested in members' experiences in applying statistical methods in their workplaces, and this includes the use of technology such as statistical software. To that end, Paul Barrett, Honorary Senior Research Fellow at the University of Auckland, has provided a review of the statistical software SYSTAT which appears later in this issue. If you wish to contribute a review of another package, please contact the editors.

Competition results

Last issue we asked you to come up with statistical limericks. Geoff Riespreier offers the following one on a Bayesian theme.

The Frequentist called him a liar!
But the Bayesian fought back with fire:
"Those data you're coddling
are no match for my modelling,
And my hyper-parameterised prior!"

Carl O'Monty has turned his poetic skill to stochastic processes.

I sing to the siren Stochastic
Who turns rigid lines to elastic,
Sharp corners go curvy,
Normal space topsy-turvy!
It's a stodgy old world gone fantastic!

Norbert Wiener was going insane,
when his brownie-in-motion went tame.
Whisked him out for a walk
'round a randomised block,
and his brownie was never the same.

This one from our featured member of a few issues ago, Frank Hansford-Miller. Frank tells us that he took his first degree at UCL and then went on to King's. A long time ago now being eighty-six!

Fun and Games at UCL

Karl Pearson once had the brilliant notion
To calibrate his data by a measure called the Standard Deviation
But in his excitement off his Galton Chair of Eugenics he fell
With such a bump that it disturbed dead Jeremy Bentham's body on display at his UCL
And poor wounded Karl found that Isaac Newton's gravity in the fall had given him a massive Multiple Regression

Finally, Ken Brewer has come up with a beauty about Jerzy Neyman.

When that great statistician, J. Neyman,
claimed, "Confidence intervals – yea man –
they've been a great hit!"
he had then to admit,
"Understanding them's hard for the layman ..."

Competition

Who is the best-known statistician who ever lived? An article by Gerald Hahn, entitled "Deming and the proactive statistician", appears in the November 2002 issue of *The American Statistician* with a claim (p. 290) that "Deming is probably the best-known statistician, in the eyes of the general public, who ever lived". Do you agree? Why is it so? If not, who would you suggest instead?

So (1) who is the best-known statistician who ever lived, and why? (2) Who *ought* to be the best-known statistician who ever lived, and why? Submit your answer to either or both questions to the Editors by 20 July. The answer to each question should be 25 words or less.

SSAI new Executive Officer

Jane Waslin was appointed as Executive Officer of SSAI in late February 2003. Her role is to manage the 'business' aspects of the Society and ASPAI including the membership records, financial matters, publications schedules and provide management support for the Executive, Central Council, Accreditation Committee, Branches, Conference Organising Committee and members.

Jane has a Bachelor of Arts from ANU and this month completed a Graduate Diploma of Management from UNE. She has extensive experience managing member-funded organisations, both in Australia and overseas. Her most recent position was in Jakarta, Indonesia where she managed an international community activity centre, and prior to moving to Jakarta she was Executive Director of the Institute of Foresters of Australia, based in Canberra.

Jane sees her role at SSAI as one providing a central point of contact for the variety of 'customers', both within and outside SSAI who seek assistance while consolidating the Society's records to make sure all our legal obligations are met.

Jane is employed on a part-time basis and can be contacted either by email (ssai@ozemail.com.au), telephone (02) 6249 8266 or via mail at the Society's postal address.

Thanks for a job well done!

Lesley Sieper has moved on from her Administrative Officer role with the Society after five years of valued service. Lesley contributed very significantly to the smooth running of the Society in that time, being heavily involved in a wide range of central administration activities, the Accreditation Committee, the Newsletter and the Journal. Lesley could always be relied upon to get the job done, and she always managed to do it with a smile. In recognition of her outstanding service to the Society, Lesley was awarded a Certificate of Appreciation at the Australian Statistical Conference in Canberra last year. From all those that worked with Lesley we wish her all the very best for the future.

SSAI's Public Awareness Campaign kicks off

Statistics. A job for professionals

After years of slow preparation, two committees and two sets of professional advisors, the SSAI has launched a Public Awareness campaign.

The campaign has two goals:

- to advertise the risks of an unprofessional approach to handling statistical data
- to promote the benefits of a professional approach, using professionally accredited statisticians – i.e. to support the SSAI Professional Accreditation program

It has been developed in consultation with Julian Cribb and Associates. Julian, a former science writer for *The Australian*, also spent several years developing and managing the CSIRO Public Awareness unit.

The campaign will be customised to specific groups, commencing with Federal Government departments. The strategies to be used include:

1. an advertising campaign in national and Canberra newpapers, featuring cartoons by the leading Canberra-based cartoonist, Geoff Pryor
2. press releases
3. letter drops to Federal parliamentarians
4. a visit and presentation to senior bureaucrats by Dennis Trewin

Supporting materials that may be of interest to SSAI members include

- a professionally produced booklet of statistical *Success and Disaster* stories, some of them illustrated by Geoff Pryor's cartoons which will be reproduced in this and following issues of the SSAI Newsletter
- the PowerPoint presentation that Dennis Trewin will use in his visits

Both these resources are available at http://www.statsoc.org.au/PublicAwareness. Printed versions of the booklet will also be available.

If the materials inspire you to produce more *Success and Disaster* stories, please email them to ssai@ozemail.com.au

Accreditation

Re-accreditation

Accreditation began in the Society in January 1998, and each person accredited was given accreditation for 5 years, ending on 31 December of the fifth year after accreditation. Hence, accreditation for those approved during that first year runs out at the end of 2003.

Over the coming weeks, the Society will be sending out re-accreditation forms to those who were accredited in the first half of 1998. In a few months, we will send forms to those accredited in the second half of 1998. Since these people have already established their statistical competence, the Committee only needs to ensure that the person has "continuing contact/involvement with Statistics and the practice of Statistics". The Committee, however, is interested in the professional development of our statisticians, so the form seeks information about activities undertaken in recent years. The form is already available on the website at http://www.statsoc.org.au/pdfs/Reaccreditform.pdf

Professional Development

The Society is building a portfolio of supported professional development workshops and activities. Accredited members will be able to attend these at a discounted rate. The first of these courses was held in Canberra in 2001 and we are pleased to announce that the Committee has approved two more such courses that will be run later in 2003. Information about the first of these, on Longitudinal Data, is included elsewhere in this Newsletter.

Software Review: Systat 10.2

SYSTAT is an extensive suite of statistical analysis routines for analysing quantitative data, explicitly written for use on personal computers, and now in its tenth release. It arrived nicely packaged with 6 hardcopy manuals (2000+ pages) and an installation CD and installed with no problems whatsoever. A set of icons was created in a program folder – with links to online help, the pdf format manual files, the standalone ASCII text editor (FEdit), and the program itself. On the review machine (a 2GHz Pentium-4 standalone PC), non-cached load time for SYSTAT was 4.1 seconds in comparison to that for STATISTICA 6 and SPSS 10.07 of 6.5 seconds.

The software package has a very clean user-interface with the screen partitioned into three key areas. The first is an "output organizer", a navigation screen typical of most statistical software nowadays which displays the analyses that are run on a dataset in tree-view. The second is the "output pane" which displays the text and graphics of any results from statistical analyses. The third is a "command" area in which text commands can be typed in order to manipulate the data, or to construct and/or preview a command file; alternatively, it can be designated as a "command logging" region.

Getting data into SYSTAT is achieved either by direct keying into a spreadsheet or by the import of stored data in various file formats such as ASCII, SPSS, Excel, SAS, BMDP, ArcView, and ODBC via SQL. Exporting of data and results files is equally impressive with the capability of exporting results directly to HTML and RTF formats, ready for web and word-processor document construction.

Not only does SYSTAT provide accurate and nicely structured quantitative output, it also provides display graphics of an extremely high quality and diversity. In fact, there is a complete manual devoted solely to the Graphics available for displaying data. These graphics exceed those of BMDP, SAS, and SPSS in terms of quality and all-round utility. Virtually every aspect of a graph from text through to axes, points, and lines, can be edited and adjusted. This is an entire graphics package in its own right. The Influence plots, LOWESS, and other data smoothers available to the user within the graphics subsystems are a fine embodiment of exploratory data analysis.

The list of Statistical Analysis routines available to a user in this package is significant:

Bootstrapping and Sampling	Nonparametric Statistics
Classification and Regression Trees	Partial Order Scalogram Analysis
Cluster Analysis	RAMONA Path Analysis
Conjoint Analysis	Perceptual Mapping (MDPREF, Biplot etc.)
Correlations, Similarities, and Distance Measures	Power Analysis
Correspondence Analysis	Probit Analysis
Cross-tabulations	Rank Regression
Descriptive Statistics	Ridge Regression
Experiment Design	Set and Canonical Correlation
Discriminant Analysis	Signal Detection Analysis
Factor Analysis	Data Smoothing
Linear Models 1: Linear Regression	Spatial Statistics
Linear Models II: Analysis of Variance	Survival Analysis
Linear Models III: General Linear Models	T-tests
Logistic Regression	Item Analysis including 1-2 parameter IRT
Loglinear Models	Time Series Analysis
Missing Value Analysis	Two Stage Least Squares
Mixed Regression	Multidimensional Scaling
Nonlinear Models	

For automation of repetitive analyses and for creating standard analysis procedures, SYSTAT contains its own command language. This consists of meta-commands which run entire analyses from an "optioned" command-line statement, very much like SPSS in form and utility. It also provides a rudimentary procedural customisation language, SYSTAT BASIC. This programming language enables a user to program specific actions on data files, and augment analysis results with custom calculations and graphics. It is similar to the old MS BASIC/GWBASIC language, highly serviceable if a bit limited in these days of object-oriented programming.

Overall, SYSTAT 10 can be recommended as a robust general-purpose statistical analysis and graphical display system that is at least half the price of its nearest competitors. It has also been around for over 14 years now, which has invariably helped make this a very stable and reliable software analysis system. It is an extremely attractive proposition for educational use in literally any area where undergraduate and postgraduate statistical methods are taught. Further, given the advanced specification of many of its routines, it can also serve as a substantive research tool in its own right.

Purchase Information

Contact Systat Software Inc., 501 Canal Boulevard, Suite C, Richmond, CA 94804-2028, USA. Tel: +1 -510-231-4786, Fax: +1-510-231-4789, email: pacsales@systat.com, web: www.systat.com. A single-user permanent commercial license cost is US$1299; an academic/educational single-user license is US$499. Bulk discounts apply for commercial as well as academic users. The minimum recommended machine specification is a Pentium/equivalent processor, with Microsoft Windows 95/98/NT 4/2000/ME/XP operating system, 32Mb RAM (minimum), 30Mb hard disk space and an SVGA monitor.

Acknowledgement

My thanks are extended to Systat Software Inc. for providing the review copy of SYSTAT 10.2 .

Paul Barrett

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Statistical Society of Australia Inc.

Operational Plan 2003

Version 1.0. Released April 2003 Review date: February 2004

Strategy	Specific aspects	Milestones, needs and actiions
1. Provide high-quality and relevant journal (ANZJS) and Newsletter	(a) Pursue whether to make *ANZJS* fully electronic (b) Include sections in *Newsletter* relevant to key groups (c) Expand *Newsletter* to complement *Journal* if it goes electronic	• Electronic journal decision to be taken at July 2003 CC meeting. • Suggest that the current Editors of the *Newsletter* (Alice Richardson and Michael Adena) – ask Joe Gani to arrange submissions from, and interviews with, retired members and overseas members – request a regular column from the Young Statisticians – request regular input from Sections, possibly through the Section representative on Central Council (Kerrie Mengersen) • put electronic versions of the Newsletter on the Web site by end 2003.
2. Run high-quality conference program, with a biennial Australian Statistical Conference alternating with a biennial Special Topics conference		• ASC 2004: Director is Neville Bartlett. • ASC 2006: Director for SSAI aspects to be appointed by SSAI Exec. • ASC involvement in ISI. Nick Fisher currently has responsibility.

Strategy	Specific aspects	Milestones, needs and actiions
3. Maintain a website that supports the diverse requirements of the SSAI membership, its Branches and Sections and Executive, and the wider community	(d) Provide Branch and Section access to membership lists	• Bruce Fraser to convene a working group and submit a plan to the June 2003 Executive meeting, ahead of the July CC meeting.
4. Conduct an ongoing Public Awareness Campaign	(e) Include annual plan for attracting and retaining people in the profession	• Nick Fisher to document the Public Awareness Plan and submit it to the June 2003 Executive meeting. • Alan Branford to hold a teleconference with Branch Presidents to look for new Champion(s) by mid-April.
5. Conduct ongoing professional development and scientific interaction program	(f) Run Continuing Professional Development (CPD) programs (g) Institute National Visitor program (h) Institute Travelling Road Show (i) Support networking & other communication, especially facilitating two-way consultative advice with academic statisticians	• CPD: see under Strategy 7 (Accreditation) • Executive to identify a leader for each of 4 subgroups of this strategy, with Neville Bartlett having overall responsibility. • Business manager's role to be clarified by the Hon Secretary. • Approach Peter Hall about establishing the National Visitor program. • Ask Kerrie Mengersen about the travelling road show. • Networking and other communication should be Branch activity, so Alan Branford will have responsibility for this aspect. • Nick Fisher to open discussions with Jim Ramsey (President, Statistical Society of Canada) about the AusCan scholar proposal. • Alan Branford to produce a report on progress by Branches with Networking and related communication activities for the December 2003 Executive meeting.
6. Ensure representation and involvement of key groups on key committees.	(j) YS membership on Branch Councils (k) Branch and Section and YS membership on SSAI Executive (l) Sections and Branches to produce annual Plans	• Complete (j) and (k) by end 2003. • Alan Branford to report to April 2003 Executive Meeting about progress with this strategy. • Hon Secretary to report Branch Plans to Exec by Dec 2003.
7. Conduct a Professional Accreditation program	(m) Run professional accreditation process (n) Institute a re-accreditation process (o) Institute a program for accrediting Statistics programs at universities	• Re-accreditation to start in May 2003. • Guidelines for accreditation of University undergraduates programs to be submitted to April 2003 Executive meeting. • Nick Fisher to document CPD process for July 2003 CC meeting.
8. Develop and implement a plan for Statistics to be taught in schools nationwide	(p) Preliminary meeting of representatives from all States, and SSAI and school backgrounds, to discuss, secure agreement and develop plan	• Nick Fisher to participate in 31 March 2003 meeting and develop a proposal for SSAI depending on the outcomes of the meeting.
9. Run an efficient and effective Business Office	(q) Hon Secretary to review Regulations about description of the current position	• Honorary Secretary to review Regulations concerning duties of the Executive Officer and to report to the March 2003 Executive meeting.
10. Recruit new members	(r) Strategy for undergraduates	• AB to report to July 2003 CC meeting on steps taken by Branches.
11. [Strategy relating to Establishing and maintaining the Society as a trusted public commentator and advisor on statistical issues.]		

SSAI

Statistical Society of Australia Inc.

Strategic Plan 2003 – 2007

The latest versions of the strategic and operational plans can be found at:

www.statsoc.org.au

Version 1.0. Released April 2003

Next review date: February 2004

1. Introduction

This Strategic Plan has been developed in a somewhat paradoxical context.

On the one hand, Statistics as a profession appears to be under threat, as witnessed by

- disappearance of separate Statistics departments at Universities
- falling numbers of undergraduate and graduate students in Statistics
- shortage of research-minded applicants for University positions
- shortage of suitable young recruits for ABS, pharmaceutical companies, …
- the apparent decline of Statistics in CSIRO
- articles that warn of the threats to the discipline etc.

Membership of the SSAI has been in steady decline for the last few years, as shown in Figure 1. However, this is not a uniquely Australian phenomenon, as can be seen from corresponding graphs for the Royal Statistical Society and the American Statistical Association (Figure 2).

Indeed, it may be somewhat symptomatic of professional societies in general. People seem to have less and less disposable time, and are asking more critical questions not only about how they use this time but about how they spend their money. That is, they are asking: *Am I getting value for money from my professional society?*

The paradox is that there is an ever greater requirement for Statistics and statistical thinking, because of

- increased use of data in government, business and industry to inform and justify their activities
- increasing numbers of major studies (EPA, clinical trials, …)
- increasing competition increased pressure to remain competitive and to demonstrate this

increasing numbers of jobs and opportunities for which (in our view as statisticians!) good statistical skills, knowledge and ability are prerequisites

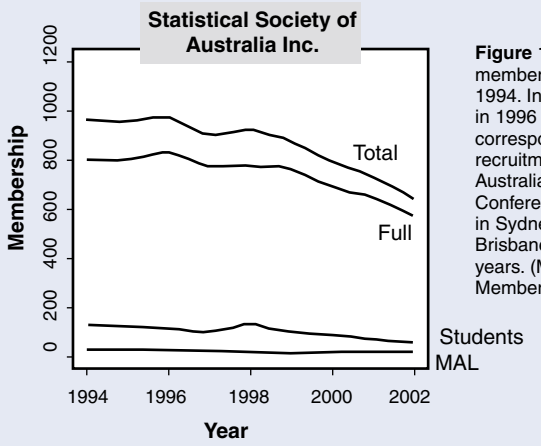


Figure 1: SSAI membership since 1994. Increases in 1996 and 1998 correspond to recruitments at the Australian Statistical Conferences in Sydney and Brisbane in those years. (MAL = Members At Large.)

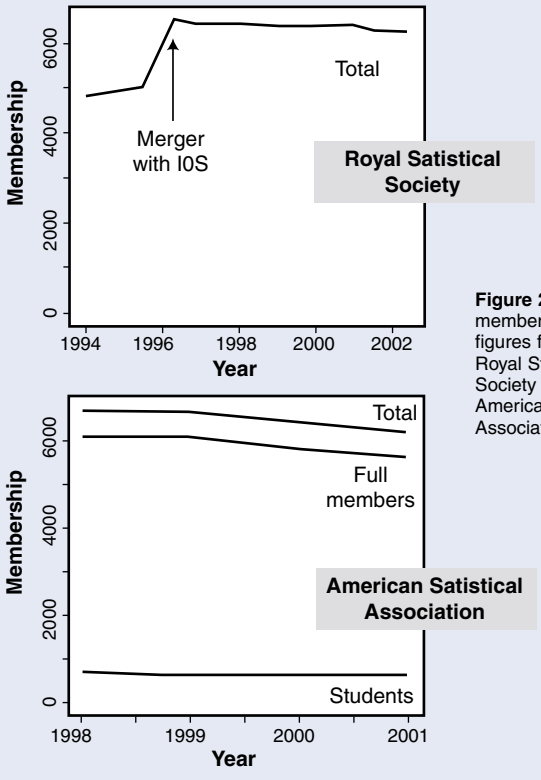


Figure 2: Similar membership figures for the Royal Statistical Society and the American Statistical Association.

So, this is a critical time for the Society. Our two choices are to continue SSAI's current modus operandi, or to endeavour to do something different. The likely outcome of each of these approaches is shown in Tables 1 and 2.

Option 1: Continue as we have been	
Area	**Likely outcome**
Membership	Continual decline
Activities	Collect subscriptions, run part-time SSAI office, publish journal and newsletter, run biennial conference, support Professional Accreditation? (may have died out under this option)
Financial state	Struggling; enough to carry out basic activities listed above
Relevance to anyone	Run biennial ASC for benefit of some SSAI members

Table 1: Likely outcomes if SSAI continues its current way of operating, without significant change.

Option 2: Endeavour to change	
Area	**Likely outcome**
Membership	Growing continuously
Activities	Provision of relevant services to members, ongoing promotion of Statistics (Public Awareness programs), provision of advice as a peak body, vigorous Professional Accreditation program, …
Financial state	Robust; able to support all current programs plus new initiatives
Relevance to anyone	Perceived as vital to many key groups

Table 2: Possible outcomes if SSAI endeavours to make significant improvements to all aspects of its activities.

This, then, is the most compelling reason for the Strategic Plan. It seeks to identify the most important requirements of its various stakeholders over the coming years, and to pursue Objectives that will meet these requirements. The Objectives listed in the next section are designed to be SMART (Specific, Measurable, Achievable, Realistic, and Time-bounded). Following the Objectives are a number of strategies intended to help the Society meet its Objectives. The Objectives will be re-visited each year to check on progress and for modification in the light of recent developments. An Operational Plan for the coming year would then provide implementation of relevant aspects of the strategies.

This plan has been formulated after considerable development by an SSAI planning committee whose members represented all key SSAI stakeholders. Input on a range of proposals was sought from attendees at the 2002 Australian Statistical Conference. At a meeting held in October 2002, the SSAI Executive produced a draft list of Strategic Objectives, and some possible strategies. A draft document containing this material was circulated to both the Planning Committee[1] and to the Standing Committee on Corporate Memory[2], and their feedback incorporated into a draft Plan. Finally, the Plan was discussed and adopted at the Central Council meeting held on February 14, 2003.

An Operational Plan for 2003-2004 was developed at the same meeting.

We urge anyone interested to participate in making this work. It's your Society, and this Plan has the membership as its primary beneficiaries. Please join in.

Approved by the SSAI Executive:

N.I. Fisher	President
N. Bartlett	Vice-President
R. Robertson	Honorary Secretary
S. Horn	Honorary Treasurer
C. Lloyd	Editor, ANZJS
A. Branford	Branch President representative
K. Mengerson	Section Chair representative
S. McGregor-Macdonald	Young Statisticians' representative
Jane Waslin	SSAI Executive Officer

(Footnotes)

[1] John Carlin, Brenton Dansie, Teresa Dickinson, Steve Duvall, Nick Fisher, Joe Gani, Rodger Robertson, Eden Brinkley, Des Nicholls, Peter Hall, Philip McCloud, David Scott, Eric Sowey, Jodie Thompson

[2] Eden Brinkley, Tim Brown, Daryl Daley, Nick Fisher, Chris Heyde, Ian James, Helen MacGillivray, Des Nicholls, Ron Sandland, Dennis Trewin, Neville Weber, Evan Williams

2. Strategic Objectives

Objective 1. Provide products and services that are vital to the academic statistical community.

Strategies

- Appropriate publications
- Continuing Professional Development program
- Institute a Visitors' Program
- Appropriate web site
- Accredit tertiary courses
- Conferences
- Develop constructive relationships with funding providers

Measures of Success Value survey (see Appendix)

Objective 2. Provide products and services that are vital to statisticians working in Government, business and industry.

Strategies

- Maintain a strong Professional Accreditation program
- Continuing Professional Development program
- Appropriate publications
- Travelling road show
- Support networking and other communication
- Appropriate web site
- Conferences
- Public Awareness program

Measures of Success Value survey (see Appendix)

Objective 3. Ensure strong and active Branches.

Strategies

- Appropriate publications
- Appropriate web site
- Public Awareness program
- Provide appropriate central support and advice for Branch initiatives

Measures of Success Value survey (see Appendix)

Objective 4. Ensure strong and active Sections.

Strategies

- Appropriate publications
- Appropriate web site
- Public Awareness program
- Provide appropriate central support and advice for Section initiatives

Measures of Success Value survey (see Appendix)

Objective 5. Maintain a vigorous Young Statisticians' program.

Strategies

- Conferences
- Appropriate web site
- Appropriate publications
- Public Awareness program
- Continuing Professional Development program
- Maintain a strong Professional Accreditation program
- Maintain job vacancies clearing house

Measures of Success Value survey (see Appendix)

Objective 6. Develop and promote Statistics Curriculum in schools.

Strategies

- Promote the development and adoption of national statistics framework for Years 11 and 12 at school, based on the best teaching practices that can be utilised, together with appropriate training programs for teachers.

Measures of Success Framework adopted by all States and Territories by 2007

[To be adopted if we can find a champion for it:

Objective 7. Establish and maintain the Society as a trusted public commentator and advisor on statistical issues.

Strategies

- Public Awareness program
- Channelled opportunities for genuine expert participation in public debate on matters of social/political controversy with statistical dimensions

Measures of Success Value survey (see Appendix)]

3. Strategies to achieve Objectives

Strategy 1. Provide high-quality and relevant journal (ANZJS) and Newsletter. [Objectives 1, 2, 3, 4, 5]

Specific aspects

(a) Pursue whether to make *ANZJS* fully electronic

(b) Include sections in *Newsletter* relevant to key groups

(c) Expand Newsletter to complement *Journal* if it goes electronic

Milestones, Needs and Actions

a: Pursue whether to make ***ANZJS*** fully electronic

b: Include sections in *Newsletter* relevant to key groups

c: Expand Newsletter to complement *Journal* if it goes electronic

Strategy 2. Run high-quality conference program, with a biennial Australian Statistical Conference alternating with a biennial Special Topics conference. [Objectives 1, 2, 4, 5]

Milestones, Needs and Actions

Establish a good planning process for this, so that requirements are established in a timely fashion, and ensure it is linked to CPD requirements

Strategy 3. Maintain a web site that supports the diverse requirements of the SSAI membership, its Branches and Sections and Executive, and the wider community. [Objectives 1, 2, 3, 4, 5, 6]

Specific aspects

(d) Provide Branch and Section access to membership lists

Milestones, Needs and Actions

d: Bruce Fraser to head working group

Strategy 4. Conduct an ongoing Public Awareness Campaign.

[Objectives 1, 2, 3, 4, 5, 6]

Specific aspects

(e) Include annual plan for attracting and retaining people in the profession

Milestones, Needs and Actions

e: Launch early 2003. Alan Branford to consult Branches to produce suggestions for a suitable owner

Strategy 5. Conduct ongoing professional development and scientific interaction program. [Objectives 1, 2, 5]

Specific aspects

(f) Run Continuing Professional Development (CPD) programs

(g) Institute National Visitor Program

(h) Institute Travelling Road Show

(i) Support networking & other communication, especially facilitating two-way consultative advice with academic statisticians

Milestones, Needs and Actions

Perhaps one individual for each of 4 subgroups of this strategy

Neville Bartlett to have overall responsibility

Business manager's role needs clarification

f: CPD to be part of Accreditation Committee's activities

g: University statistical departments need to be involved. Approach a leading academic about establishing the National visitor program

h: Ask senior academic to explore concept of a travelling road show

i: Networking and other communication should be Branch activity, so Alan Branford (representative of Branch Presidents on SSAI Exec.) will have responsibility for this aspect Establish a good planning process for this, so that requirements are established in at timely fashion In place by December 2003 Link to (f) and (g)

Strategy 6. Ensure representation and involvement of key groups on key committees. [Objectives 3, 4, 5]

Specific aspects

(a) YS (Young Statistician) membership on Branch Councils

(b) Branch and Section and YS membership on SSAI Executive

(c) Sections and Branches to produce annual Plans

Milestones, Needs and Actions

j: By end 2003

k: Done

l: By end 2003

Strategy 7. Conduct a Professional Accreditation program.

[Objectives 1, 2, 5]

Specific aspects

(a) Run professional accreditation process

(b) Institute a re-accreditation process

(c) Institute a program for accrediting Statistics programs at universities

Milestones, Needs and Actions

m: Overall responsibility devolves to the incumbent Chair of the Accreditation Committee Responsibility includes running the CPD program (with administrative work handled by the SSAI Business Office)

n: July 2003

o: July 2003

Strategy 8. Develop and implement a plan for Statistics to be taught in schools nationwide. [Objective 6]

Specific aspects

(d) Preliminary meeting of representatives from all States, and SSAI and school backgrounds, to discuss, secure agreement and develop plan

Milestones, Needs and Actions

p: Nick Fisher to coordinate. Meeting being arranged by Dennis Trewin and Nick Fisher for end March 2003

Strategy 9. Develop a constructive relationship with funding providers.

[Objective 1]

Milestones, Needs and Actions

Incumbent President responsible for this

Strategy 10. Run an efficient and effective Business Office.

[Objectives 1, 2, 3, 4, 5, 6]

Specific aspects

(e) Hon Secretary to review Regulations about description of the current position

Milestones, Needs and Actions

q: Incumbent Business Manager responsible for this strategy Formal performance reviews at least twice annually

Strategy 11. Recruit new members. [Objectives 3, 4, 5,]

Specific aspects

(f) Strategy for undergraduates

Milestones, Needs and Actions

r: Alan Branford to coordinate with Branches

[If Strategic Objective 7 is adopted: need a strategy relating to Establishing and maintaining the Society as a trusted public commentator and adviser on statistical issues]

APPENDIX. Measures based on Value Surveys

A Value Survey[3] is based on the concept of a Value Tree. The basic idea is that organisations seek to provide products and services to their markets (comprising customers and potential customers) with superior Value, where Value is to be measured in terms of

- Satisfaction with the *Quality of the Product or Service received*; and
- Satisfaction with the *Price Paid*

Quality and *Price* can each be broken down further, leading to a so-called "Value Tree". For an SSAI member, this may look something like that shown in the Figure.

The Value tree is turned into a survey by asking questions of the form

On a scale of 1 to 10, where 1 is *Poor* and 10 is *Excellent*, please rate SSAI on the following:

> Relevance of its range of products and services?
>
> The extent to which these products and services support your work?
>
> *etc.*

followed by a summary question asking for an overall rating of SSAI's Products and Services, and so on through the whole Value Tree.

The result is a tree-structured data set of ratings that can then be analysed to identify

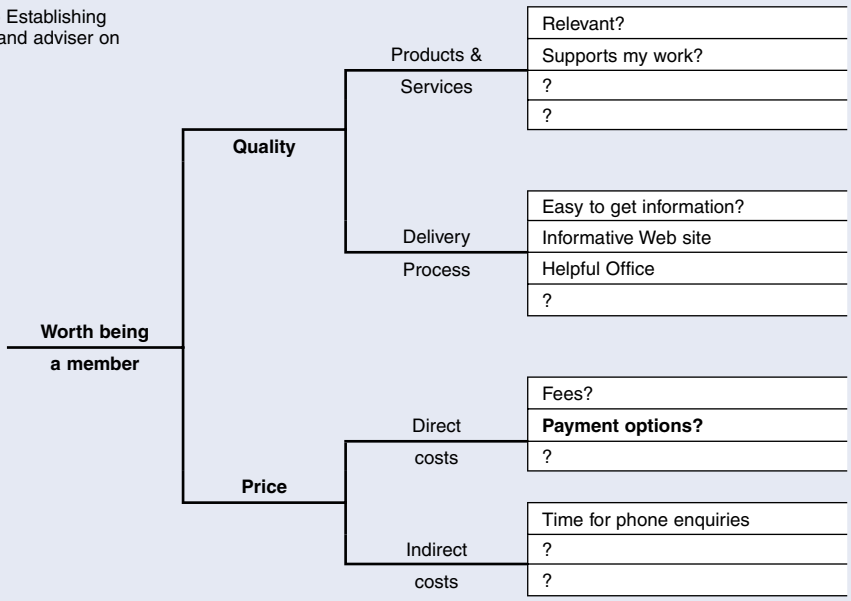
(a) which attributes (far right column of table) carry the most weight in driving overall satisfaction (far left column of table); and

(b) where does SSAI rate lowest.

and so to select improvement priorities.

(Footnotes)

[3] The best account of this is in the book *Mastering Customer Value Management* by Ray Kordupleski and Janice Simpson, published by Pinnaflex Educational Resources in April 2003.
See www.pinnaflex.com/cvmbooks/.



Prototype Value Tree to ascertain SSAI Members' views of the value that SSAI creates for them.
The overall concept of Value is described as "Worth being a member".
The attributes in the far right column need to be established from Focus Groups.

NOTICE

The Annual General Meetings of The Statistical Society Of Australia Inc and The Australian Statistical Publishing Association Inc. will be held on Tuesday 8 July 2003 at 5.30pm in Seminar Room G35, Ground Floor, John Dedman Building, Australian National University, Canberra

SSAI Annual General Meeting - Agenda

1. Apologies and Proxies
   Proxies must be given in writing as per form inserted in the May 2003 issue of SSAI Newsletter. Proxy forms must be received at the SSAI office for passing to the Secretary no later than 24 hours before the time of the meeting.

2. Confirmation of the Minutes - Minutes of the meetings as circulated

3. Matters arising

4. Accreditation
   4.1 Report from Accreditation Committee
   4.2 Report on Public Awareness Campaign

5. Reports
   5.1 President
   5.2 Treasurer
   5.3 Branches
   5.4 Sections

6 Conferences
   6.1 ASC 2004 / IBC 2004
   6.2 ASC 2006 (joint with NZSA, in Auckland)
   6.3 SSAI involvement in ISI 2005 (Sydney)

7. Election of Section Chairs
   Nominations for Section Chairs should be received at the SSAI office no later than 27 June 2003. Nomination Forms have been inserted in each copy of the May issue of SSAI Newsletter. All nominations require a seconder and a statement from the nominee that she or he is prepared to stand.

8. Other business

ASPAI Annual General Meeting - Agenda

1. Apologies and Proxies
   Proxies must be given in writing as per form inserted with May issue of SSAI Newsletter. Proxy forms must be received at the SSAI office for passing to the Secretary no later than 24 hours before the time of the meeting.

2. Confirmation of the minutes - Minutes of the meetings as circulated

3. Matters arising

4. Presentation of the 2002 Annual Report by the Editor of the Australian and New Zealand Journal of Statistics

5. Presentation of the 2002 Annual Report by the Newsletter Editors

6. Treasurer's Report

7. Other business

NEW SOUTH WALES

The President of the NSW Branch, **Associate Professor John Rayner** of the University of Wollongong, delivered his Presidential Address at the AGM in March. He spoke on *Academia: Anticipation and Actuality*, a topic he chose because almost all of the members of the Society are graduates. In a reflective mood, he asked several questions, of which an intriguing one was whether he would advise someone contemplating an academic career to persevere or to do something else instead. In the course of answering this question – at least for ordinary individuals, his answer seemed to be in the negative – he touched on some of the changes he had seen in his nearly thirty-year career. On balance he felt much had improved, but much had been lost too, especially in the encroachment of "managerialism" into what was once a collegial profession. He enlivened his talk with examples of bad teaching derived from his personal observation. Sometimes (although he mentioned no names unfavourably) the culprits were recognised by the audience: unfortunately (or perhaps fortunately) they, and their sins, cannot be identified here.

He concluded (in part) that: it is sometimes too easy to do less than justice to the job and survive; and it is also too easy to do a double workload and still not be valued by either your employer or your students for that effort. After these sobering reflections and some discussion, the meeting departed to a nearby hostelry.

Alun Pope

April Meeting

At the April meeting we were honoured to have one of our Young Statisticians, **Simon McGregor-MacDonald**, speak to us on the analysis of supermarket shopping. Simon is the lead contact for Young Statisticians across the country and has worked with MARKET21 as a Data Modeller for over two years now, developing database systems, creating demographic reports, building statistical models, and solving various business problems.

The meeting started with a comment from myself that I was the only female in the audience – interesting given that the title of the talk was 'The ins and outs of supermarket baskets'. As luck would have it Simon's first slide of a 'typical' shopper was, you guessed it, a male! As you can imagine this led to some gentle ribbing and set the scene for a very interactive discussion of supermarket shopping habits.

Simon started his talk by discussing the BehaviourScan service that MARKET21 offers. This is a comprehensive study of shopping behaviour embracing every product sold through the supermarket. It combines data from a variety of sources, including basket data and store exit interviews, to address the question of who is buying what, where and when. He broke the talk down into a number of parts.

Firstly Simon discussed the shopping basket data. This is obtained electronically from the checkout records. This data comes to the office in tape format and is loaded into MARKET21's systems. Lo and behold, even in this electronic age, missing data are still a problem (in the past up to around 14% from some supermarkets but now reduced to about 1%). A selection of reports was presented and a lively discussion ensued around when people shopped for certain items and why they shopped at these times. Simon then went on to highlight issues with discounts and promotional activities such as how to differentiate what is a discount and what is promotional and the resulting impact on customer behaviour.

In addition to the basket data, shopper interviews are undertaken. These interviews are performed after a shopping trip has been completed. MARKET21 aims to have questionnaires that can be completed in 2 to 3 minutes for obvious reasons including that of ensuring people with small baskets participate. Apparently traditional questionnaires have taken 8 to 12 minutes and the 30% of shoppers with small baskets would therefore not be included! Information from the exit interviews can then be matched with that of the basket data.

The third part of the package is store observation. This includes information on where a product is located in the store and how the products are laid out. MARKET21 have a couple of staff working full time designing and developing floor plans using MAPINFO. These floor plans were very interesting as they very quickly highlighted hot spots in a store by the use of colour. The amount of traffic in a shopping aisle is estimated from the items purchased in that aisle as reflected in the basket data. These floor plans are also interactive for the clients and distributors can pay a premium to ensure their product is displayed in what they see as the best spot.

On a final note, during question time we came to appreciate what MARKET21 has done for the large supermarkets and their suppliers in that they have developed all the reports, floor plans etc and are continually working with their clients to improve the information they receive.

Caro Badcock

Training courses run by SAS

The NSW Branch announced in May an arrangement with SAS under which Branch members will be able to take part in certain SAS training courses, beginning in July, at a special, substantially discounted price. The details have been circulated to members and are available on the Branch web-site.

VICTORIA

At the March Annual General Meeting, **Kay Lipson** took over from Neil Diamond as Victorian Branch President. Kay lectures at the Lilydale campus of Swinburne University, where she is 'Discipline Leader' in Statistics. She is actively involved in the theory and practice of Statistics Education.

Kay Lipson at the International Conference on Teaching Statistics in Cape Town, July 2002. A President who can ride an ostrich should have no trouble keeping the Branch Council under control

In addition to the four new Chairs (or equivalent) mentioned in the last newsletter, Melbourne has acquired one more statistician of professorial rank. Personally, though, I always say that you can never have too many professors of statistics. You need enough to be able to compile adequate summary statistics on them.

Following a period of nearly fifteen years at The Australian National University in Canberra, first as Research Fellow and eventually Reader in Econometrics and Statistics, **Don Poskitt** has recently moved to Melbourne to take up a Chair in the Department of Econometrics and Business Statistics at Monash University. Don has been ranked amongst the top econometricians and statisticians world wide and was a recipient of the 2002 American Statistical Society award for Outstanding Statistical Application. Although Don is perhaps best known for his work in time series analysis, he has an eclectic range of interests and is looking forward to some interesting interactions with the Melbourne econometrics and statistics fraternity.

A happy and relaxed Don Poskitt. He's in Victoria now.

Category one statisticians Alan Agresti (left) and Chris Lloyd prepared for any contingency, provided it comes in tabular form.

It is easy to say something categorical about **Alan Agresti**: he's an expert on the subject. Alan, on sabbatical from the University of Florida, visited the University of Melbourne for the week of April 8-12, and presented a double seminar to a nearly full house on the Thursday afternoon. In the first hour he outlined ideas for improving confidence intervals for proportions, and in the second hour he surveyed models for ordered categorical data. Alan's wife has accused him of writing three books with essentially the same title (*Analysis of Ordinal Categorical Data*, Wiley, 1984; *An Introduction to Categorical Data Analysis*, Wiley, 1996; *Categorical Data Analysis*, Wiley, 1st edition 1990, 2nd edition 2002). But it's a good thing he did: his lectures were masterly and accessible, reflecting his well-honed communication skills.

The Victorian Microarray Technology Consortium organised a week-long workshop on *Microarrays: Applications and Data Analysis*, hosted by La Trobe University from 7-11 April. Two of the invited speakers were prominent overseas statisticians. **David M. Rocke** (pronounced 'rock') from University of California Davis, in a strongly attended plenary lecture, proposed a

David Rocke (far left) visited the Victorian Bioinformatics Consortium, represented by (second-from-left to right) Phil Brown, Robert Flegg and Albert Trajstman.

Dynamic Di Cook (centre) flanked by Kathy Ruggiero, a former Victorian Branch Councillor now lecturing in Auckland, and Kym Butler, the Victorian Branch Treasurer.

new statistical model for microarray data. David's list of professional interests makes for worthwhile reading: statistical analysis of gene expression data; statistical analysis of high-throughput biological assay data; analysis of massive data sets; robust statistical methods; chemometrics; formal models in international relations; applications of statistics in medicine and epidemiology, biology, environmental science and earth sciences; quality and productivity improvement. That's a massive data set in itself. No wonder he finds bioinformatics a piece of cake (see photo).

Di Cook completed her undergraduate degree at the University of New England in New South Wales in 1982, but she has been on the statistics faculty at Iowa State University for many years. She is a member of the team that developed the popular dynamic graphics tool *ggobi*. The name is intriguing – perhaps using it is like exploring a desert. Her plenary lecture illustrated the use of modern multivariate graphical methods to visualise structure in microarray data.

The workshop attracted about 100 delegates. In contrast to statistics conferences I have been to recently, most of the audience was young (under 35) and there was no obvious male bias or, for that matter, female bias – but this is genetics. Unlike physics and mathematics, bioinformatics appears to have a bright future.

Geoff Laslett

British Election Night Forecasting for the BBC, 1970-1997

The March Annual General Meeting of the Victorian Branch was addressed by **Phil Brown**, who is currently working at C.S.I.R.O. for one year but is permanently based at the University of Kent at Canterbury in England. Phil, whose photograph appears in the Victorian Branch News in this issue of the Newsletter, has worked in British parliamentary election forecasting in each general election from 1970 to 1997, and it is these experiences he shared with us during his talk.

Phil became involved in his first election forecast as a Ph.D. student in 1970, as part of the team that the BBC had assembled for its election coverage. The British election coverage works quite differently from its Australian equivalent, due mainly to the differences in the election systems that each country uses. A key difference for the media coverage, and indeed for the setting of the forecasting problem, is that there are no partial counts of votes available in any seat. No information is available for an electorate until a winner is declared. At that time, and only at that time, do the electoral authorities reveal how many votes each candidate attracted.

This disadvantage is partially offset by the larger number of electorates in Britain. In 1970 there were 635 seats in the British parliament, and by 1997 this had grown to 659. The results for each seat are made available as the counting for the seat is completed. There is a bit of a race on among counters to see which can be the first seat declared. This will always be an urban seat, where there are no substantial delays in getting the votes to a central counting place. Urban seats tend to be Labour seats, so there is a bias towards Labour in the early results. The key to the forecasting, of course, is to look at how the votes have changed since the last election, and to try to predict what other seats will change hands. On election night, about 10 seats will come in between 10 and 11 p.m., and about 200 results will have come in by 2 a.m..

Phil explained some of the forecasting models that he has used, but also gave us a feel for the environment that an election night forecaster is working

in. Phil's work was with the BBC, the "voice of the nation", who are very keen to be seen as an authoritative and reliable source. Unfortunately, in 1970 they were not performing particularly well, and were being beaten by commercial broadcaster ITV who based their forecasting on exit polls in key marginal seats. The BBC's performance has since improved, no doubt in part due to Phil's efforts. There is also always a lot of media interest in the "Gravesend test". The seat of Gravesend had a long history of always electing a member of the winning party (until recently).

In closing, Phil also noted that presentation is very important when your client is a media broadcaster. Dynamic graphics are very important for the election night coverage. They love phrases like "landslide" and "likely majority" but don't like to hear about the problems or the uncertainty. There is also a lot of focus on the 'swing' in the presentation, although it is not used to a great extent in the forecasting.

Bruce Fraser

Do left-handed people die young?

There is a dinner party game in which guests cite surnames that reflect, usually in some whimsical sense, their owners' professions. The Melbourne Yellow Pages includes Dr Paino the dentist and several Sharp accountants, for example. Anyone who attended the April meeting of the Victorian Branch wondering if **Martin Bland** might provide a fitting example for the discipline of statistics would have been sorely disappointed. Martin, Professor of Medical Statistics at St George's Hospital Medical School in London, proved to be an entertaining, provocative and energetic speaker. Martin is famous partly for being one half of the Altman and Bland duo. Douglas Altman is Professor of Statistics in Medicine at the ICRF Medical Statistics Group in Oxford. Altman and Bland have jointly written numerous articles illustrating, using real case studies, statistical pitfalls in medical research and contrasting misuses with correct analyses.

Martin Bland
Photo: Brian Phillips

Martin's Branch presentation, entitled 'Do left-handed people die young?', was similarly didactic. In the late 1980s several psychologists independently published 'evidence' that left-handers die young. Halpern and Coren, for example, extracted data from *The Baseball Encyclopaedia* and reported, in a *Letter to Nature* in 1988, that the mean age at death of right-handers was 64.64 years, while that of left-handers was 63.97 years. They followed this in 1991 with a Letter to the Editor of the prestigious *New England Journal of Medicine*, in which they announced an astonishing nine year difference in favour of right-handers, based on information collected in a survey of relatives of deceased southern Californians.

Martin (with and without Douglas Altman) wrote letters of protest to the editors of both journals. The study design implicitly assumes that the population structure is stable over many decades. Using such a design we would undoubtedly discover that those who buy Britney Spears' CDs die, on average, much younger than those who do not. Of more direct relevance, increasing acceptance of left-handedness in the population under study may mean that the proportion of left-handers is increasing. A rigorous analysis would compare the data for left- and right-handers cohort by cohort, so that changing population and social factors are allowed for. The editors apparently failed to understand these methodological flaws, and refused to publish Altman and Bland's criticisms.

By good fortune Martin stumbled across some psychologists from the University of Durham who were interested in repeating the baseball study using archival data on first-class cricketers. Martin saw this as an opportunity to analyse such data properly and convinced them of his objections to the Halpern and Coren approach. He was invited to join the research team. They discovered that the proportion of left-handed players had increased from about 14 percent in 1840 to 19 percent in 1900, and then had decreased. This is the sort of trend that could sabotage the Halpern and Coren style of analysis. The data source included dates of birth, so Martin and his colleagues were able to carry out a survival analysis (Cox regression) that included both survivors and deceased cricketers and took into account the changing proportion of left-handers. They found no difference in death rates from natural causes, but left-handers did have a higher death rate from accidents and active war service. Martin speculated that this might be caused by left-handers living in a right-handers' world. Their article appeared in the *British Medical Journal* in 1994.

It was observed that those wishing to ask questions all raised their right hands. Fast learners, these statisticians.

Geoff Laslett

QUEENSLAND

The Annual General Meeting (AGM) of the Qld Branch of the SSAI was held on Tuesday March 4th at QUT. Minutes of the AGM, and the President's and Treasurer's Reports for 2002 are available at http://www.maths.qut.edu.au/ssaqld/

The following people were elected to Council at the AGM of the Branch:

PRESIDENT: Dr Bronwyn Harch
SECRETARY: Dr Petra Kuhnert
TREASURER: Dr Charis Burridge
COUNCILLORS: Dr Peter Baker,

Dr Ross Darnell, Dr Melissa Dobbie, Dr Tony Sahama, Dr Nancy Spencer, Dr Tony Swain, Ms Joanne Walker, Dr Rodney Wolff.

Coherent building of statistical awareness and thinking across educational levels

After the AGM, **Associate Prof. Helen MacGillivray**, School of Mathematical Sciences, Queensland University of Technology, addressed the Branch on her perspectives in relation to the coherent building of statistical awareness and thinking across educational levels.

Helen outlined both the positives and negatives in the increasing drive to include chance, data and statistics strands throughout all school educational levels. Positives include increasing awareness of the importance of statistical numeracy and of the statistics profession for many aspects of national and international economic and social health and development. However, many statisticians are skeptical about the value of this drive, as their impression is that the increase in statistics in school curricula has turned more students "off" statistics. Negatives of the drive tend to have their origin in lack of understanding of the statistical discipline and its thinking and practices, and in insufficient indepth thought and research from a statistical perspective into the what and the how of building an educationally graduated and coherent development of statistics throughout schooling and into post-school situations. Helen discussed what can and should be done, traps to avoid, what is needed from the statistical profession, and what is needed for supporting, developing and resourcing teachers, schools and students.

BIOGRAPHY:

Helen MacGillivray's teaching and curriculum design experience of 25 years extends across all areas of statistical sciences and their applications, across all levels of subjects, all class sizes and most disciplines. During the last decade her work in teaching and learning has received support through seven national or university grants. She is increasingly involved in mathematics and statistics education with the Queensland Board of Senior Secondary School Studies, the Queensland Schools Curriculum Council, and now with the Queensland Studies Authority, and other areas of Education Queensland. She is currently director of QUT's Maths Access Centre.

Tony Swain (outgoing President, QDPI), Helen MacGillivray (March Speaker - QUT) and Peter Baker (outgoing Secretary).

Conservation Decision Making: Is Statistics any Use?

The April meeting of the Queensland branch was addressed by **Professor Hugh Possingham**, Director of The Ecology Centre, The University of Queensland.

Hugh gave an exposé of work currently being undertaken in the Ecology Centre and focused on some of the common misconceptions concerned with hypothesis testing, analysis of variance and principal component analysis techniques that ecologists are often faced with. More specifically, he presented some interesting examples where ecologists in general, focus on collecting data suitable for analysis using an analysis of variance, without any appriori notions and testing null hypotheses that are either inappropriate for the data at hand or alternatively do not add any value to the analysis.

Hugh presented work from one of his PhD students who is interested in how abundance of woodland birds is affected by low, moderate and high grazing areas. He highlighted how motivation for this work stemmed from a series of apriori models, one of which involved developing a foraging substrate model that produced a forage rank for each species of bird that could easily be interpreted. An alternative model under investigation is an expert opinion model. This involves eliciting information from experts about how grazing levels might increase or decrease bird numbers for specific species and

A diverse audience of Ecologists and Statisticians listen intently to Professor Hugh Possingham speak on Ecology and statistics.

Hugh Possingham showing how the foraging model was developed for woodland birds.

determining if expert opinion matches information recorded from surveys.

The novel idea of using a "virtual ecologist" to determine if process can be obtained from pattern was also presented. The idea behind this approach was to simulate a process and use a "virtual ecologist to test the ability of habitat models to find good habitat. The example that Hugh gave was simulating the habitat of the female greater glider and investigating if birth-death rates could be inferred from the probability of territory occupancy. Once simulated, a "virtual ecologist" would be sent in to collect data from the simulated region in a manner similar to a real ecologist. These samples can be analysed using standard statistical methods (e.g. logistic regression) and then compared with the actual system used to simulate the habitat of the species.

Hugh also spoke about the concept of active adaptive management, which is a focus of a number of researchers within the Ecology Centre for a wide range of problems that include kangaroo management and weed eradication. He presented a simple fishery model to illustrate the concept and highlighted the problem of managing the system when the chance of the fishery collapsing from a vulnerable state is uncertain. One way to approach the problem in an active adaptive environment, is to collapse the fishery early and learn more about the system. Hugh flagged this as an important area of research for the group.

Finally, the question of "why do we monitor?" was raised. Hugh discussed how monitoring is often performed for auditing purposes, to raise awareness about a potential problem, triggering action from stakeholders or simply to learn a system and act accordingly.

BIOGRAPHY:

Hugh completed Applied Mathematics Honours at The University of Adelaide in 1984. After attaining a Rhodes Scholarship in 1984 Hugh completed his D.Phil at Oxford University in 1987. Postdoctoral research periods followed at Stanford University and at the Australian National University (as a QEII Fellow). In 1991 he took a Lectureship, later Senior Lectureship, in Applied Mathematics at The University of Adelaide. In 1995 he was appointed Foundation Chair and Professor of the Department of Environmental Science at the Roseworthy campus of The University of Adelaide. In July 2000 Hugh took up a joint Professorship between the Departments of Zoology & Entomology, and Mathematics at The University of Queensland. In February 2001 The Ecology Centre was established with Hugh as Director. From 2003-2007 Hugh is an ARC Professorial Research Fellow.

The Possingham lab includes four postdoctoral researchers and ten PhD students working on empirical and theoretical aspects of the applied population ecology of plants and animals. Particular areas of recent research include marine reserve design, optimal landscape reconstruction for birds, metapopulation dynamics of plants and animals, population viability analysis, kangaroo and koala management, and optimal weed control (as part of the Weeds CRC). The lab has a unifying interest in environmental applications of decision theory.

Hugh has published over 100 refereed articles and book chapters. Hugh has a variety of broader public roles including Chair of the Federal Government Biological Diversity Advisory Committee, member of the NHT Advisory Committee, member of the state Ministerial Advisory Committee on Vegetation Management, member of the Research and Conservation Committee of Birds Australia and member of the Board of Greening Australia, Queensland.

Hugh has recently been awarded: the POL Eureka Prize for Environmental Research (for collaborative work with Dr David Lindenmayer) - 1999, the inaugural Fenner Medal for plant and animal biology from the Australian Academy of Sciences - 2000, and the Australian Mathematical Society Medal - 2001.

He suffers from obsessive bird watching.

Petra Kuhnert

Data Mining in Practice: Banking, Insurance, Bioinformatics

At our February meeting **Dr Dan Steinberg**, CEO, Salford Systems, introduced data mining as the application of modern, highly automated nonparametric analytical methods to recognize enduring patterns in data. He then overviewed and discussed several of the major tools of data mining, including decision trees (CART), artificial neural networks, multivariate adaptive regression splines (MARS), rule induction and several others.

After illustrating the value of the classification approach in banking (based on purchasing pattern, is a credit card in the hands of its true owner?) and in evaluating university admission procedures, he addressed some of the common questions from statisticians about data mining. What is common to data mining and statistical analysis, how did data mining come to be and why have computer scientists led so much of the data mining development? In answering these he emphasised the very large data sets often involved, the nonparametric nature of the methods, with very few statistical tests and a heavy reliance on test data to validate results, and differences in jargon.

Encouragingly, he highlighted the very important role a statistician could play in the analysis and interpretation of results from data mining.

The talk concluded with a detailed illustration of the use of CART with data collected in 1992 on potential purchases of mobile phones - an interesting example he was happy to discuss, since the usual need for confidentiality associated with applications seeking commercial advantage had rapidly passed!

Some of the material presented, with further detail on the methods, is on the Salford Systems website. Links are in the talk summary on the SSAI Queensland site.

BIOGRAPHY:

Dan Steinberg is a well respected member of the data mining, statistics and analytical consultation communities. His more than 20 years of experience in the field include Member of Technical Staff at AT&T Bell Laboratories, and Assistant Professor of Econometrics at the University of California, San Diego, as well as numerous consultation engagements with Fortune 100 clients. He received his Ph.D. in Economics from Harvard University, and has received honours from the SAS User's Group International. He has published articles in statistics, econometrics, computer science, and marketing journals, and is the developer of a series of advanced statistical analysis programs. In addition, he has been a featured data mining issues speaker for the American Marketing Association, American Statistical Association and the Direct Marketing Association. He currently divides his time between the company offices in San Diego and Sydney.

Tony Swain

CANBERRA

At our first meeting of the year (February), we were fortunate to have **Nick von Sanden** from the University of Wollongong present work he has done on measuring the interviewer component of response error in household surveys. The observation that responses collected by the same interviewer tend to be more similar than responses collected by different interviewers is widely known as the "interviewer effect". Nick related the story of a 1929 social survey of homeless men, in which one of the interviewers was a vocal prohibitionist and another, an avowed socialist. As it happened, the prohibitionist's data indicated that the main reason behind homelessness was alcohol abuse. At the same time, the socialist's data indicated that the main reason behind homelessness was poor economic and social conditions. Modern training techniques have helped to reduce, but not eliminate, the interviewer effect.

A good measure of the interviewer effect leads to a better estimate of the precision of survey estimates. When the interviewer effect is ignored, variance is underestimated. However, it's not always so simple to isolate the interviewer effect, because it is often confounded with geographical effects. Survey data are usually spatially clustered due to housing type and age of people within a household. Nick showed us how multilevel modelling is used to directly estimate the interviewer effect. He also discussed extensions to the multilevel response models, in particular longitudinal multilevel models. The equations got longer and longer, but then shorter again and we learned happily that with geo-coding, explicit spatial correlation structures can be used which lead to much simpler multilevel models.

On that happy note, several of us had a lovely dinner at Zeffirelli's in Belconnen.

★★★★★

The eminent statistician, **Professor Joe Gani**, spoke at the March meeting on statistics and history. At first glance, there appears to be little connection between statistics and history, one being concerned with measuring characteristics of populations and the other with interpretation of events. Statistics, in fact, plays an important role in historical research, and an intelligent historical perspective often requires accurate well-presented statistical data.

As an example, Joe took an historical look at us as a nation by way of publicly available statistics presented as tables and graphs. We followed our history between 1961 and 1981 from a nation predominantly male (138 males to 100 females) to one with slightly more females than males. An historical look at our economy revealed that the percentage of farm products in the Australian GDP had declined from 19% in 1953 to 4% by 1983. In health, numbers of medical practitioners (per 100,000 population) roughly doubled between 1960 and 1984.

Statistics give us a picture of who we are today. Joe showed a table from 1999 of the countries of birth of Australians. Of the 19 million Australians, 14.5 million were born in Australia. Another 2.4 million were born in Europe, 0.5 million in South East Asia, 1.5 million elsewhere. The great majority of Australians are in fact of European descent, despite the occasional assertion that one is "surrounded by a sea of Asian faces".

Statistics allow us to peer into the future. Current fertility, mortality and migration statistics are used to predict the size of our population by age group well into the future. Projections of the Australian Bureau of Statistics under three scenarios with different immigration rates indicate that the population of Australia is likely to be respectively 23.8, 22.9 and 22.4 million in 2021, and 31.9, 25.2 and 22.6 million in 2101. A large proportion of these will be aged 65 and over.

Using modelling, statistics can play an important role in formulating hypotheses about historical events when accurate records are not available. Joe related the story of a model developed by Richard Tweedie to describe the apparently random distribution of populated and unpopulated Polynesian islands. Based upon partial records and human skeletons found on uninhabited islands, Tweedie's model estimated the probabilities of long term group survival, given the size of the original colony.

Joe closed his talk with some statistics comparing the proportion of GDP spent on R&D in Australia with that spent in other countries. He remarked that it was a sad commentary that while Australia had the intellectual training and enterprise to match the best overseas research, the support that would make such research possible did not seem to be forthcoming.

A lively discussion followed over dinner and wine in Civic.

Terri Neeman

WESTERN AUSTRALIA

2003 Western Australian Young Statistician's Workshop

The Young Statisticians of the WA branch of the Statistical Society recently held a workshop to promote statistics and statistical careers to young statisticians in Western Australia. The workshop was held on Friday 21st of February at the Cottesloe Beach Hotel where enviable views of the coastline and Rottnest Island were enjoyed.

The 2003 workshop built upon the aims of the 1994, 1999 and 2001 workshops, which were to develop, maintain and improve contact and support amongst young statisticians. It was a positive sign for the statistical community in Western Australia to see a turnout of 41 participants – a blend of undergraduates, postgraduates and recent graduates in statistics or related disciplines. Participants listened to a range of interesting presentations given by invited speakers and other participants. At the end of the day, the young statisticians walked away with a vast amount of information, made new friends and met a number of key professionals in the WA statistics profession.

Our keynote speaker, **Dr Philip McCloud** from Roche Products in Dee Why, NSW, gave an inspiring talk on how statistics has been used in the development of pharmaceutical drugs in a highly regulated environment. After speaking about the statistician's role in general, Philip discussed "the calculation of the variance of a non-linear random variable with the multivariate delta method" in some detail – a difficult and stimulating problem that he had been working on. In another aspect of his presentation, Philip provided useful and practical advice to students about the transition from studying statistics to working as a statistician, including a lot of useful reference material for the statisticians of the future. He also discussed the importance for all statisticians of keeping up to date with new statistical developments at the completion of their studies by reading statistical publications and journals and attending conferences and seminars. Roche Products has been an important ongoing supporter of our previous workshops and it was great to see Philip make it to Perth to give a presentation this year.

Each of our invited speakers was given free rein as to what they talked about, although they were asked to focus on the practical side of statistics and its applications to make it more relevant to young statisticians. Some speakers chose to focus on a particular statistical technique that they had used, while others gave a broader perspective on their career. It was interesting to hear about statistical consulting from two different points of view – one a consultant from a private consulting firm and the other from within a large government department. We also heard about data collection and analysis for a recreational fishing survey ("What's the catch?") and an explanation of different types of imputation methods used in ABS business surveys.

Young statisticians were also encouraged to present, with a $200 cash prize available for the best talk. The seven Young Statistician speakers presented a range of interesting talks on topics such as "Statistics as a Second Language", "Reflections on Postgraduate Study for Those Tempted or Scared by the Prospect", "A Statistical Approach for Finding Fish in an Underwater Video", and "Analysis of Spatial Clustering". Our keynote speaker, Dr Philip McCloud, together with the 2001 winner Helen Teasdale, judged the best Young Statistician presentation. The cash prize (kindly donated by Roche Products) was awarded to Pam McCaskie from the University of Western Australia for her inspirational talk on her love of both statistics and human biology and how these two disciplines together form a powerful combination. Pam's talk covered the importance of teaching statistics in other fields to enable scientists to tackle their research with greater confidence.

The continued support of our sponsors, the Statistical Society of Australia Inc (WA Branch), Data Analysis Australia, Roche Products, Telethon Institute for Child Health Research, CSIRO, Australian Bureau of Statistics, University of Western Australia, Curtin University of Technology and Murdoch University, makes events such as these possible and I would like to take this opportunity to thank each of them. I would also like to thank all of our speakers for inspiring the next generation of statisticians. Special thanks also go to the rest of the organising committee, Andrew Hiskins and Tarn Duong – without their dedication and commitment the workshop would not have been a success.

As a result of arrangements made at the workshop, the WA Young Statisticians group has already had one get together over dinner since the workshop. A great night was had by all who attended and more informal gatherings are planned throughout the year.

Marleen Voortman and Anna Munday

On a personal note, I would like to take this opportunity to thank the Statistical Society of Australia Inc (WA Branch) for their continued support during my 2½ years as WA State Representative. However, it is time for new blood to take on the young statistician cause and breathe new life into the group, and Anna Munday from Data Analysis Australia has now taken on the role. I'm sure that Anna will receive the same amount of support and encouragement as I have in the past.

Marleen Voortman

Australasian Conferences

New Zealand Statistical Association Conference 2003

2 – 4 July, 2003
Massey University, Palmerston North website will be at http: //www. ist.massey.ac.nz/stats/nzsa2003/
Contact: Duncan Hedderley, D.I.H edderley@massey.ac.nz

Australian Young Statisticians Conference

26 – 27 September 2003
Boulevard on Beaumont Hotel, Newcastle, NSW
Contact: Simon McGregor-McDonald, smacdonald@market21.com.au

Australian Statistical Conference

11 – 16 July 2004
Cairns, Queensland
Contact: Neville Bartlett, bis@iprimus.com.au

International Biometric Conference

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

Overseas Conferences

Hawaii International Conference on Statistics and Related Fields

5 – 8 June, 2003, Sheraton Waikiki Hotel, Honolulu Hawaii USA
Sponsored by: University of Hawaii – West Oahu
Web address http:// www.hicstatistics.org
Email address: statistics@hicstatistics.org

ISIS 3 and 3rd Annual Meeting of ENBIS

21 – 22 August, 2003
Barcelona, Spain
Information about the conference can be found at the ENBIS website www.enbis.org and at the SBI website www.public.iastate.edu/~sbi

The Thirteenth International Conference on Quantitative Methods for the Environmental Sciences and The Twelfth General Meeting of the International Environmetrics Society (TIES)

21 – 24 August, 2003
Friendship Hotel, Beijing, China
Major Theme: Quantifying how our environment affects us.
Information: http:// www.cmis.csiro.au/ties2003/

6th International Conference of The Mathematics Education into the 21st Century Project

19 – 25 September, 2003
Brno, Czech Republic
"The Decidable and the Undecidable in Mathematics Education!"
Contact: Alan Rogerson, email: arogerson@vsg.edu.au

Web site of the month

Don't forget about your Society's own website, which is http: //www.statsoc.org.au. Here's where you can find out about SSA Branches and Sections, and apply to become an accredited statistician. For a more general audience, there is information about careers in statistics, and about the importance of the skills of statisticians in general, and accredited statisticians in particular. This Newsletter even has a web page, and the Editors are hoping to place pdf versions of Newsletters there in the future.

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