




# STATISTICAL SOCIETY OF AUSTRALIA INCORPORATED NEWSLETTER

 **March 2011**  
Number 134

## ASC 2010 — Statistics in the West: Understanding our World

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Fremantle, WA.



Promaco Conference desk. Attendees at Lunch.

Geoff Lee & Jane Speijers. Jerome Friedman, USA.



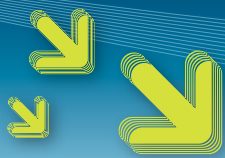
Historic conference dinner venue.



Esplanade Hotel, conference venue.

**From 6-10 December 2010 delegates were treated to a fascinating conference program, including an array of well-known International and Australian keynote speakers, all of whom are leaders in their fields.**

>> pg5



March



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Contact the SSAI Executive Officer at  
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**DEADLINE FOR NEXT ISSUE:**  
**10 May 2011**

## Editorial



Alice Richardson.

**Welcome to the first edition of the Statistical Society of Australia newsletter for 2011. The editors hope that you'll find this a useful and diverting publication with reports of past events, notices of meetings to come, and items of general statistical interest from all around Australia. Of course this newsletter can only publish the material you send in, and all Society members can contribute. Please feel free to send letters, notes, articles, reports, and especially photographs of events in your area or other statistical ideas that would be of interest to members.**

The highlight of this issue is of course the photos and reports from ASC 2010 in Fremantle in December 2010. The newsletter editors congratulate the organisers on a fantastic event and hope to carry progress reports soon from the organising committee of ASC2012 in Adelaide. Save the date now! Before then

there is the whole of 2011 to get through, and the President's column in this issue lists many interesting initiatives that Central Council is considering for 2011. Please consider whether you have something to offer toward any of those items so that the Society can offer a full range of activities in all states this year.

Looking further ahead, the Statistical Society will turn 50 in 2012. Anyone who has lists of members, meeting notices or other items that may be of historical interest, please start sorting them out now so that the Society can pull together as many threads as possible from the past to celebrate in 2012. Please contact the editors at [eo@statsoc.org.au](mailto:eo@statsoc.org.au) with your ideas and information.

We look forward to communicating with you through the newsletter this year. Best wishes from the editorial team, Alice Richardson and Michael Adena.

*Alice Richardson*  
Alice Richardson  
Editor

*Michael Adena*  
Michael Adena  
Editor

#### EVENTS

Mapping Global Change  
23-25 March 2011 in Enschede, The Netherlands  
<http://www.spatialstatisticsconference.com/>

Adaptive Designs Workshop  
Presented by Brenda Gaydos, Frank Bretz and Patrick Kelly  
6-7th April 2011 in Sydney  
<http://www.statsoc.org.au/?pageid=1865>

The Second Institute of Mathematical Statistics  
Asia Pacific Rim Meeting  
Tokyo, Japan, 4th-6th July 2011  
<http://www.ims-aprm2011.org>

International Conference for Health Statistics in  
the Pacific Islands  
5-8 July 2011,  
Tanoa Plaza Hotel, Suva, Fiji  
<http://www.statsoc.org.au/PacificHealth>

Australasian Applied Statistics Conference  
(GenStat and ASReml)  
(formerly Australasian GenStat  
Conference)  
12-15 July 2011, Palm Cove, North  
Queensland, Australia  
Contact: [Carole.Wright@deedi.qld.gov.au](mailto:Carole.Wright@deedi.qld.gov.au)  
Conference Secretary

Survey Sampling and Data Collection  
12-13 July 2011, Brisbane  
<http://www.statsoc.org.au/?pageid=1897>  
Young Statisticians Conference 2011

14-15 July 2011, Brisbane  
<https://www.statsoc.org.au/young-statisticians-conference.htm?date=1297900207862>

ICIAM 2011—Seventh International Congress on  
Industrial and Applied Mathematics  
18-22 July 2011, Vancouver, Canada  
<http://www.iciam2011.com>

58th Session of the International Statistical  
Institute  
21-26 August 2011, Dublin, Ireland  
<http://www.isi2011.ie/>

Optimal Design of Experiments—Theory and  
Application  
International Conference in Honor of the  
late Jagdish Srivastava  
25-29 September 2011, Vienna  
<http://mzvtagung.boku.ac.at/index.php>

Biometrics Society Australasian Region meeting:  
Biometrics by the Chiama Blowhole  
4-8 December 2011  
"The Sebel Harbourside" in Kiama, NSW  
<http://www.biometrics.org.au/conferences.html>

8th World Congress in Probability and Statistics  
(jointly organised by the Bernoulli Society and IMS)  
9-14 July 2012, Istanbul, Turkey  
<http://www.worldcong2012.org>

Australian Statistical Conference 2012  
9-12 July 2012, Adelaide, SA  
More information to follow.

# President's Message

## Dear Members

I'll begin by thanking Jane Speijers, Brenton Clarke, and all their team members who helped organise a very successful conference last December. Those of you who were there will know how smoothly all the arrangements ran, what an interesting program there was, and how inspiring the keynote speakers were. The ASC was also surrounded by some well attended workshops, and enriched by the links with the OZCOTS "satellite" event. The Pitman Medal (literally the "gold" medal for statistics in Australia) was awarded to Professor Geoff McLachlan, a very worthy winner from a strong field that was considered by the SSAI Awards Committee. Also pleasing was the quality of the field competing for the Pitman Prize for best conference presentation by a young statistician. Ian Renner won the prize, but the committee recommended the award of two certificates of merit to Anna Campain and Chris Parady, as the field was so strong. We closed with a plenary session discussing the future for statistics in Australia, where a good many good ideas emerged for us to follow up this year.

Even though it is only early February 2011, and ASC seems a long time ago, I hope SSAI members, family and friends have escaped the worst of the floods, cyclones and fires that have happened since then. On a more cheery note, we held the first Executive Committee Meeting for 2011 in late January - and there's a lot on. Just to give you a sense of current and planned SSAI activity, here are some of the topics we discussed and are working on:

- Upcoming conferences, include the Young Statisticians' Workshop in Brisbane later this year, ASC 2012 to be held in Adelaide, and ASC 2014 set down for Sydney.
- Recruitment and retention (if your membership renewal falls due soon, please renew promptly to remain a part of the Society)
- Organising a small workshop/discussion group to explore the institutional membership idea further

- The creation of a new section/ special interest group to progress our international activities and links with other Societies (related to the ASA's Friends of the Asia Pacific SIG)
- Maintaining and extending the program of workshops that has been running so well for a couple of years now (as an aside, my thanks to CSIRO and ABS who helped bring Don Rubin and Elizabeth Zell to Canberra and Sydney for some very well attended, and very worthwhile workshops)
- Starting work on implementing the strategy for raising public awareness about statistics and data based public debate
- Working with AMSI (the Australian Mathematical Sciences Institute), FASTS (the Federation of Science and Technology Societies), and ACHMS (the Australian Council of Heads of Mathematical Sciences) to promote statistics and the other numerate science professions, and lobbying on their behalf. (Since the meeting, Kerrie Mengersen has been involved in discussion about the ERA ranking mechanisms and outcomes; and will be looking at how we might contribute to a submission to the DEEWR Review of Base Funding for Higher Education).
- and more ....including financial planning for SSAI for 2011 and beyond; the journal and the newsletter; exploring how we might support list-servers for the branches and the sections; following up the ASC 2010 plenary session; and the statistics components of the new school curriculum!

As you see, like statistics itself, the SSAI is involved in many different issues. If you would like to know more about any of these topics, send an email. There's plenty to be done and the Executive Council is always open to good ideas (and offers to help!)

Geoff Lee ■

## SSAI EXECUTIVE COMMITTEE

### Central Council:

President: Geoff Lee  
Secretary: Dr Doug Shaw  
[secretary@statsoc.org.au](mailto:secretary@statsoc.org.au)

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### Canberra

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### Victoria

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### Western Australia

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### Surveys and Management

Veronica Rodriguez  
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### Biostatistics (co-chairs)

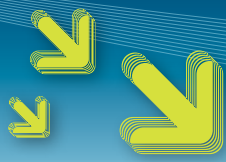
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[frank.liu@anu.edu.au](mailto:frank.liu@anu.edu.au)

Further contact details for Society Secretaries and Section Chairs can be obtained by contacting the Society on (02) 6251 3647





## President's Message cont.

# Pacific Health

The note below sent to ANZstat on  
24/11/10

Dear Anzstat members,

A couple of months ago I asked for support for the creation of a special-interest group within the American Statistical Association entitled the Friends of Australasia. This group would be one channel for increased communication between statistical communities in Australia, New Zealand, the Pacific Islands, and the US. ... It is my honour to announce that this group has been formally approved by the Executive Board of the ASA. I am now working with Ron Wasserstein to establish the logistical mechanisms for the group (website, email list, etc). One major goal for this group is to establish a stronger presence at each JSM conference, and I am currently discussing these plans with Ron. A second major goal for this group is to establish an International Conference for Health Statistics in the Pacific Islands, the very first such conference will happen in the first week of July 2011 in Suva, Fiji where the rough first draft of the conference website can be found at <http://www.statsoc.org.au/PacificHealth>. This special-interest group is in no way intended to rival groups such as the SSAI, NZSA, or ASA, but simply to provide a channel for communication between them.

I look forward to giving you a further update as the plans and logistical mechanisms for this group are established.

Mark Griffin ■

## 2011 Young Statisticians Conference

Learners Today, Leaders Tomorrow!

July 14-15, 2011 University of Queensland, Brisbane

### Call for Papers

The 2011 YSC aims to cover a wide range of topics in both applied and theoretical statistics. It can be any topic from your Honours/PhD study to simple ideas that interest you in your research.

Three prizes will be awarded for best presentations and one prize will be awarded for best poster.

The deadline for abstracts and posters is: May 9, 2011. For instructions on abstract/poster submissions and guidelines for presentations, please visit our webpage below.

### Conference Objectives

- To provide a forum for networking and the exchange of information for young and early career statisticians from around Australia.
- To promote the interests of young statisticians to the broader community.
- To broaden your knowledge of statistical methods.

### Keynote Speakers

- Prof. Dongseok Choi: "Clustering methods for high-dimensional genetics data"
- Prof. Kerrie Mengersen: "An introduction to Bayesian statistics"
- Dr Ross Darnell: "Statistical models for marine and freshwater ecosystems"

### Pre-Conference Workshop

Dr Justin Fisher, an eminent statistician who works for the United Nations, will present a satellite workshop entitled "Survey Sampling and Data Collection" on July 12-13. For details, please visit our webpage.

For any inquiries, please contact Frank ([frank.liu@anu.edu.au](mailto:frank.liu@anu.edu.au)) or Mark ([m.griffin@uq.edu.au](mailto:m.griffin@uq.edu.au)) or visit our webpage:

[www.statsoc.org.au/ysc.htm](http://www.statsoc.org.au/ysc.htm)

Organised by Young Statisticians Network,  
Statistical Society of Australia Inc.



## LOOKING FOR A JOB?

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

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

Do you have a job to advertise on the website?

Email a position description to [col@statsoc.org.au](mailto:col@statsoc.org.au) | Listing is free!

# ASC 2010 Statistics in the West cont.

To see more photographs of the Australian Statistical Conference 2010 please go to page ....[article about the ASC 2010] or to [https://picasaweb.google.com/alrankin03/2010\\_12\\_05SSAIFromEmantle?authkey=Gv1sRgCKvbyuetn9-J2AE&feat=directlink](https://picasaweb.google.com/alrankin03/2010_12_05SSAIFromEmantle?authkey=Gv1sRgCKvbyuetn9-J2AE&feat=directlink)



*Brenton Clarke, Chair of the Program Committee.*

Conference  
gallery cont.



*Main conference room as attendees gather.*



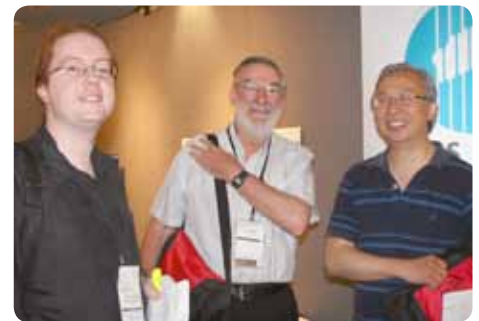
*Professor Persi Diaconis, Stanford University, USA and Dr Alan Zaslavsky, Harvard Medical School, USA.*



*Nobel laureate, Professor Barry Marshall, opening the conference.*



*Dr Gordon Smyth, WEHI, Melbourne.*



*Geoffrey Brent, Doug Shaw and Frank Yu.*



*Professor Noel Cressie, Ohio State University USA.*



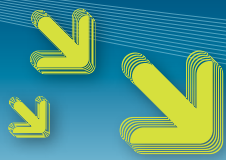
*Professor Adrian Baddeley, CSIRO, University of Western Australia.*



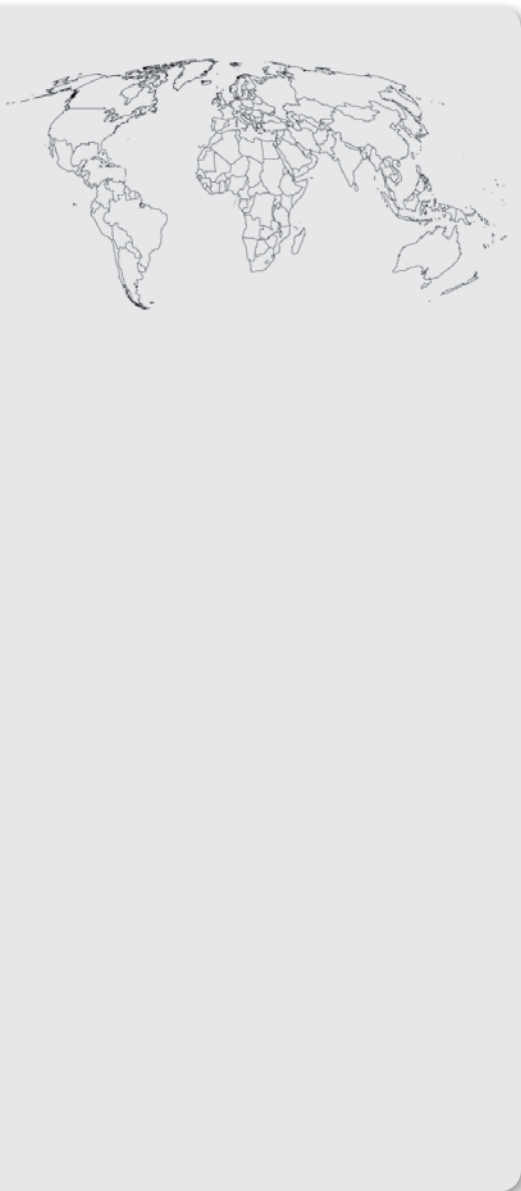
*Professor Delia North, University of Kwa-Bulu, Natal, South Africa.*

Photographs: Marie-Louise Rankin.

Full report on page 10. ■



## Statistics without borders



**Statistics Without Borders (SWB) is an allvolunteer group of statisticians that falls under the umbrella of the American Statistical Association. We were first established in 2008, and currently consist of over 170 statisticians around the world who provide pro bono consultancy activities involved in international health issues. Note that we define “health” very broadly.**

The mission of SWB is to achieve better statistical practice, including statistical analysis and design of experiments and surveys, so that international health projects and initiatives are delivered more effectively and efficiently. We are seeking opportunities to provide statistical assistance in situations where there is adequate statistical support, or where our expertise may exceed what is available to the non-profit group or government agency.

Here is a sampling of our recent projects:

- Following the January 2010 earthquake in Haiti, SWB partnered with SciMetrika, a North Carolina based health consultancy company. SciMetrika and a team of SWB volunteers visited Haiti to work on a cell phone survey to assess the economic impact of the earthquake. Our goals were to estimate the **Radical Statistics 2010** 75 employment status of the Haitian population and the change in that status, and to estimate aspects of the current housing situation. Our work was featured on National Public Radio earlier this year: <http://media.theworld.org/audio/060120109.mp3>.
- SWB is also working with researchers from Columbia University’s Earth Institute on the Millennium Villages Project. This project was designed to demonstrate how the eight Millennium Development Goals can be met in rural Africa within five to ten years through community-led development. SWB is currently working with Millennium Villages on

a clusterrandomized study of health and development interventions in 14 African countries involving 60,000 households.

- Earlier this year, several SWB volunteers conducted a review of a report on the relationship between U.S. military assistance to Colombia and extra-judicial killings reportedly committed by the Colombian military since 2002.
- SWB helped prepare a proposal for the Inter-American Development Bank to survey households in Mexico about their use of bottled water. SWB was heavily involved in the early planning and helped with the general sample design and questionnaire.
- We are also working on a longer term project with UNICEF related to poverty in Sierra Leone. This project is for the evaluation of health interventions. SWB helped with the design of the baseline survey, and is currently working on data cleaning and weighting for the survey. We expect to continue to be involved with data analysis and planning for a post-interventionsurvey.

We are seeking potential SWB volunteers, as well as organizations and projects in need of assistance with statistical issues on non-profit health-related work. For more information about SWB, if you have a potential project, or if you would like to volunteer, please visit our website: <http://community.amstat.org/AMSTAT/StatisticsWithoutBorders/Home/Default.aspx>

**Facebook page:** <http://www.facebook.com/pages/Statisticswithout-Borders>

**Email:** [g.shapiro4@verizon.net](mailto:g.shapiro4@verizon.net)

This article was provided by SSAI Member and Chair of the Biostatistics section, Mark Griffin. Mark is Head of the New Projects Committee for SWB.

**Rebecca Scherzer,**  
Vice Chair of SWB ■





# Survey Sampling and Data Collection

## 12-13 July 2011

### University of Queensland

### Brisbane, Australia

Proper sampling methodology is critical for any valid statistical analysis. Several challenges arise during the design, implementation, and reporting of results from probability and non-probability samples. This lecture-based short course, which includes two practical application sessions, will address several topics

in sampling and data collection. The course will cover topics such as: (1) program evaluation, (2) non-probability sampling, (3) probability sampling including simple random, stratified, cluster and multi-stage, (4) proper reporting of statistics, and (5) modes of data collection.

#### Tuesday, July 12

8:30-9:00	Registration
9:00-10:30	Program Evaluation
11:30-11:00	Morning Tea
11:00-1:00	Non-probability Sampling
1:00-2:00	Lunch
2:00-3:30	Simple Random and Systematic Sampling
3:30-4:00	Afternoon Tea
4:00-5:00	Practicum

#### Wednesday, July 13

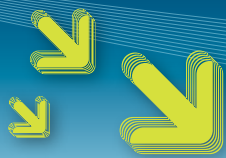
9:00-11:00	Modes of Data Collection
11:00-11:30	Morning Tea
11:30- 12:30	Collecting Data in Challenging Settings
12:30-1:30	Lunch
1:30-3:30	Stratified, Cluster and Multi-stage Sampling
3:30-4:00	Afternoon Tea
4:00-5:00	Practicum

#### *Target Audience*

This short course is aimed at non-statisticians engaged in quantitative research, and statisticians that are specialized in other areas of statistics. No previous exposure to the topics is assumed.

At the end of this workshop delegates will have acquired an understanding of:

- The mechanics of various sampling methods
- Choosing a sampling method
- Designing research questions
- How to properly report results depending on sampling method
- Advantages and disadvantages of various modes of data collection
- The process of program evaluation



### *About the Instructor*

This workshop will be presented by Justin Fisher, Senior Statistician at the U.S. Government Accountability Office. Justin works on evaluations of a wide variety of government programs and focuses methodologically on sampling and variance estimation. Prior to GAO, he held positions at various United Nations agencies including UNCTAD, UNESCO and UNESCAP, the regional office for Asia and the Pacific. As a member of Statistics Without Borders, he traveled to Haiti two months after the 2010 earthquake to assist with a survey designed to estimate the economic impact of the earthquake. In addition to his responsibilities at GAO, he is also a lecturer in the Elliott School of International Affairs at The George Washington University, Washington, D.C., where he teaches a graduate-level statistics course.

**For details on how to register for this workshop please contact Dr Mark Griffin on [m.griffin@uq.edu.au](mailto:m.griffin@uq.edu.au).**

There are separate regression costs depending upon whether the delegate is a full-time student, and a member of the Statistical Society of Australia. Registration includes a complete set of course notes, and full catering (lunch, morning and afternoon tea) throughout the workshop. To register for this workshop please visit

**<http://www.statsoc.org.au/?pageid=1897>**

<b>Payment</b>	<b>Student members</b>	<b>Student non-members</b>	<b>Members</b>	<b>Non-members</b>
<b>Before 12 June 2011</b>	<b>\$AUD320</b>	<b>\$AUD425</b>	<b>\$AUD625</b>	<b>\$AUD850</b>
<b>After 12 June 2011</b>	<b>\$AUD370</b>	<b>\$AUD475</b>	<b>\$AUD675</b>	<b>\$AUD900</b>

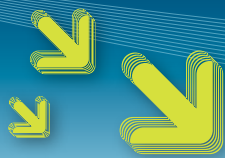
**12-13 July 2011  
University of Queensland  
Brisbane, Australia**

**Proudly organised by the  
SSAI Biostatistics Section and the  
ASA Friends of Australasia**









Jane Speijers

## Australian Statistical Conference

**Another Australian Statistical Conference has concluded and planning is already underway for the next conference in Adelaide, 9-12 July 2012. In total 353 delegates attended ASC2010 in Fremantle, Western Australia, of whom 272 were from Australia and 18 from New Zealand. Our conference also hosted a large number of international statisticians with 33 delegates from nine countries in the Asian region and the remaining delegates from 16 different countries. The conference committee for ASC2010 thanks all those SSAI members who attended the conference or contributed to its success in some other way.**

The Pitman prize for the best student presentation was keenly contested by 39 students and awarded to Ian Renner, a PhD student from the University of New South Wales. The excellence of the presentations made it so difficult to choose a winner that the assessment committee also presented Anna Campain and Christopher Parly with Certificates of Merit. The future of Australian young statisticians looks bright, if the enthusiasm, energy and commitment they demonstrated throughout the conference is anything to go by. It was especially pleasing to receive positive feedback relating to the attendance and inclusion of young statisticians in the conference and how inspirational it was

to see students and academics discussing their work together.

During the four days of the conference the exhibition area at the Esplanade Hotel, which was outside the lecture rooms and next to the coffee barista, was full of conference delegates talking about statistics, sharing ideas and catching up with colleagues and friends. The welcome reception, the young statisticians' dinner and the conference dinner were all well attended social events that encouraged networking with professional statisticians from a variety of backgrounds. The enthusiastic atmosphere of the conference was evident when the farewell happy hour finished and the delegates had to be asked to carry on their conversations elsewhere.

The diversity of the conference program was astounding, with 230 invited and contributed talks covering virtually all areas of statistics. There were many technical presentations, with presenters relating new and enhanced statistical techniques and the applications of existing techniques to new areas. Other presentations took a policy perspective, with a recurring theme related to building trust in statistics and establishing good statistical procedures for policy and management decisions. The opportunity to hear from a Nobel Laureate, Barry Marshall, was a

particular highlight for many delegates. The public lecture given by Persi Diaconis was a further highlight and it was fantastic to see so many general public attendees at the lecture. Feedback regarding the program content was extremely positive, with the diversity, quality, relevance and interest of sessions being a common response when delegates were asked about the best aspects of ASC2010.

Evaluations received from 130 conference delegates indicate that most delegates were very happy with ASC2010 (summary responses are provided in the table below). However, like all conferences, there were some aspects that delegates liked and others they thought could be improved. Some of the comments provided by delegates, for instance better internet facilities, definitely indicate how ASC can be improved and will be considered by Paul Sutcliffe and his conference committee for ASC2012 within the constraints of their budget.

Since the Fremantle conference each speaker has been asked for permission to make their presentation available on a conference website and many speakers have agreed to this. A conference website will soon be available with the ASC2010 program, abstracts and those presentations for which permission has been given to make them available. ■

	Very unsatisfactory	Unsatisfactory	Satisfactory	Good	Excellent	N/A
Pre-conference information	1%	1%	20%	50%	27%	1%
Registration process		3%	9%	44%	44%	
Conference website	1%	1%	25%	44%	24%	5%
Conference booklet	1%	4%	11%	51%	33%	
Plenary speakers	1%	1%	8%	42%	48%	
Contributed sessions		3%	20%	55%	20%	2%
Venue		2%	12%	40%	46%	
Discussion session	1%	3%	10%	26%	8%	52%
Conference rooms	1%	4%	21%	52%	22%	
Catering	1%	1%	10%	28%	60%	
ASC2010 overall	1%	1%	4%	52%	42%	

# Synopsis — ASC 2010's final discussion session *Speaking of climate change... what's the forecast for Statistics in Australia?*

Dr Peter Howley 



Dr Peter Howley.

**An obviously well-planned and smoothly executed ASC in Fremantle in December was capped off with a lively and entertaining finale discussion session on the future of Statistics in Australia thanks to an esteemed panel and some 200 or so delegates who stayed to participate.**

The session kicked off with panel members presenting views on each of four pivotal areas within the life-cycle of an aspiring statistician.

Prof Helen MacGillivray spoke to the topic of "The changing face of school education and the school/tertiary interface". Helen commented that both challenges and opportunities exist within Statistics Education and the reasons the challenges are tough are also why it is so important that these challenges are met. Helen observed the importance of educating nonstatisticians in Statistics as they are the users of Statistics, that Statistics must be involved in setting agenda and that it is the richness of Statistics that excites teachers and students, not the simple univariate analyses. Helen identified that the teaching of Statistics must reclaim 'chance' and maintain a strong link to data and real context and excite and educate teachers within the materials used in the classroom.

Prof Kerrie Mengersen then spoke to the topic relating to tertiary education, "We teach A,B,C, do we need X,Y,Z?" and its relationship to becoming a valued practising statistician. Kerrie managed to firstly turn the session into a melodrama (with audience oo's and ahh's to her many thought-provoking statistics) before having the audience acting like orangutans, testing one another's ability to mimic, to learn and to adapt. The need for statisticians to have such qualities of adaptability and evolution was an underlying theme of Kerrie's talk as she spoke about supply, demand, opportunity cost (or opportunity lost) and skills. Kerrie



Panel members left to right, Helen MacGillivray, Kerrie Mengersen, John Henstridge, Louise Ryan.

listed many sobering statistics re supply, identifying that University enrolments in mathematics' majors in Australia have decreased 15% in the last decade, 53% of Australians have low numeracy skills and 70% have low problem-solving skills. Conversely, demand for people skilled in mathematics and statistics was forecast to be growing annually at 3.5%, and more than 50% of Queensland businesses responding to a recent survey were concerned about the future availability of mathematically-capable employees. There was a noted disconnect between supply and demand to be overcome, and this failure to respond to opportunities has a real cost, with one example being that GDP was able to be increased by 20% if the workingage population was able to score an average on the international program for student achievement for all OECD countries.

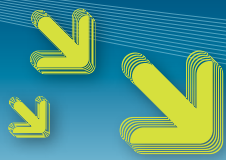
Prof John Henstridge spoke about the accreditation, or relative lack thereof, of statisticians. John noted that the SSAI's accreditation process has existed for some 12 or so years, however, there is a general lack of interest or uptake from universities to accredit their courses and programmes. Additionally, few jobs identify a 'qualified' or 'accredited' statistician as an essential, or even desirable, criterion; however, the accreditation is seemingly attractive to

young statisticians, as demonstrated by the many applications for the G.Stat. qualification. John proffered that employers' general lack of standards regarding the

employment of those to undertake statistical analyses is akin to negligence on their part, noting that, contrary to Australia, a strong professional stream for statisticians exists in the public service in the UK. John further remarked that anything short of a doubling of statistical graduates in Australia is inadequate and a lack of a policy to do so by universities is similarly negligent. He noted the existing levels of graduates were less than half of each of our NZ, US, UK and Canadian counterparts.

Prof Louise Ryan, Chief of Mathematics and Statistics Division CSIRO, spoke to the topic of Statistics in Industry and noted the hurdles to overcome in Australia. Louise noted the relatively low level of resources available to fund methodological research in Australia, compared with the US, and this lack of support and investment in Australia thwarts the potential level of progress. Louise reminded the audience of how the roots of statistics (Fisher et al) were bedded in solving real problems of importance to society and 'applications' are key in defining the value-add that a statistician can provide. Louise spoke of





## ASC2010's final discussion session

## Synopsis cont.

the 'T-shaped' statistician being required, i.e., a statistician having depth 'I' and the breadth and willingness to reach and value-add across disciplines '—'. To help foster the team aspect, CSIRO is providing on-the-job training as part of a research team to the next generation of statisticians with graduate fellowship projects aiming to produce more experienced statisticians and assisting many to become excited at undertaking post-graduate research in an applied area of Statistics.

The session was then handed over to the audience. Audience members shared their personal experiences and views of Statistics. There were initial comments of how people stumble into Statistics via computer science and mathematics backgrounds and the need to emphasise the presence of, and popularise, Statistics in schools and teach those from all disciplines.

Panelists responded with comments for and against the wider dissemination of Statistics. The Auckland University model of having the best teachers teaching Statistics into service courses was noted along with the need to move away from the boring methods of teaching Statistics. There was also an opinion that there is a need for an informed population, from a social justice view, but importantly there is a need for dedicated statisticians, rather than teaching those in other fields. There was a need for a clear message of employment availability and an increased visibility as a profession and how applicable Statistics is to the world.

Other audience observations included the views that:

- we should not be too hard on ourselves as statisticians, that the statistical revolution is ongoing, akin to the area of biology and genetics, and that the variety of presentations and sessions at the ASC was evidence of the strong need and future for Statistics;

- people generally don't know or care what we do or who we are and we, as statisticians, need to better market ourselves and feature as positive breakfast/dinner table talk within families, and that we need to better educate careers' advisors in schools on the many and varied areas of employment following an education in Statistics, as well as more clearly defining careers in Statistics;
- education and development of statisticians is not as well supported in Australia as other countries and the government needs to be lobbied to provide further support;
- we need to celebrate our diversity and build upon this strong platform as evidence of our relevance and value in society;
- there exists latent interest in Statistics within teenagers, as demonstrated by their use of descriptive statistics and spreadsheets of data for choosing players to form teams in fantasy competitions online (in rugby league, cricket, soccer, baseball, etc), and we need to link this existing interest to the additional strength that a deeper understanding of Statistics, including modelling, allows;
- education of a Statistician should involve learning, or strong exposure to, other subjects, such as biology, health, environmental sciences, in order to better equip the statistician for the applications and problems to be solved in teams.

So, whilst some suggested Statistics is simply still at the gym, or on the treadmill, in the middle of getting that desired look, and others said that statisticians are generally not liked and far from desirable, we found a common voice suggesting that tapping into both younger individuals' existing (even if not completely recognised) interests in Statistics and the conduit of

information to these individuals re careers (namely, their careers advisors), as well as better marketing and identifying of careers in Statistics and lobbying the government for support akin to support existing in other countries, are key steps in improving the future outlook of Statistics in Australia.

For those interested, it is expected that a video link to the recorded panel session will become available on the SSAI website next month.

Session Chair and co-chair of the Statistics Education Section,

Dr Peter Howley ■

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# YS Networking Nite

Leo Chow



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**Report of the Networking Nite of the Young Statisticians Section of the Statistical Society of Australia, New South Wales Branch Inc., held on Thursday, 28 October, 2010 in Seminar Room 105, New Law School Building, USYD (partly in conjunction with the World Statistics Day 2010).**

**Organisers:** Boris Choy, Jennifer Chan, Kevin Wang, Leo Chow

**Number of attendees:** 20 (with a mix of undergrads, PhD students and industry participants)

The event commenced at 6:00pm with food and drinks. Pizza, sushi, soft drinks, juice and beer were served.

A session on effective presentation skills talk went from 6:30pm to 7:00pm. Judging from feedback from the attendees, the talk was well received. One attendee had asked if we could get the speaker to give a similar talk down at Wollongong Uni. The speaker had also asked if she could give another similar talk to our society some time soon. It was good to introduce Toastmasters to our members as most of them do not know of this club which will benefit the professional development of our members. A bottle of wine was given to the speaker as a gift of appreciation.

The networking session from 7:00pm to 7:30 pm was smooth running with all participants joining in without much persuasion. It was good to see the attendees being able to interact by themselves. This session would however be more beneficial if this was run a little longer, say an extra 10-15 minutes, for our attendees to meet more of the other attendees present.

Four prizes were then given out, including three \$50 Co-op gift vouchers and a goodies backpack sponsored by KPMG. The winners were chosen using an Excel random number generator.

The event ended at around 7:45pm.

There were 12 society members and 8 non-members who attended. These non-

members attendees were told they could sign up for the SSAI membership on the day and they were told they had the option of signing up on the website as well.

We would like to thank the Statistical Society of Australia Inc., New South Wales Branch and KPMG for the sponsorship of the event. We would also like to thank Joanna Wang and Nuttanan Wichitaksorn (Nate), both Boris's PhD students, for helping out with the success of this event.

Leo Chow

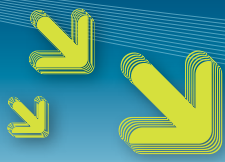
YS Representative (SSAI – NSW) ■

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To apply the discount, simply enter the promotion code **STATS11** when prompted at the checkout stage of your order, and the prices will be automatically updated.)

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Dr Munir Ahmed

## Lahore ISOSS Conference Emphasises on Increased Strategic Role of Statisticians

**The 8th International Conference on RECENT ADVANCES IN STATISTICS: “Statistics, Biostatistics and Econometrics” was held on February 8-9, 2011 at the National College of Business Administration and Economics (NCBA&E), Lahore, Pakistan. The conference was organised by the Islamic Countries Society of Statistical Sciences (ISOSS) in collaboration with the NCBA&E. The conference was in honour of ISOSS President, Dr Shahjahan Khan, for his outstanding contribution in leading ISOSS as an international professional organisation of statisticians through organisation of a number of international conferences and for promoting statistics globally.**

Delegates from Australia, USA and various countries of Europe, the Middle East and South Asia presented their recent research outputs in diverse areas of statistics. A total of 320 participants from Pakistan and other countries took part in the conference deliberations. In various scientific sessions 142 research papers were presented highlighting recent advances in statistics, biostatistics and econometrics. Unfortunately, many Western participants were unable to present their submitted papers due to travel restrictions to Pakistan. A large number of statisticians who could not join the conference sent their messages of appreciation emphasising the great contributions of Dr Shahjahan Khan.

Mian Shamim Haider, a former Federal Minister of Railways and Sports in the Government of Pakistan inaugurated the conference as the chief guest. He emphasized on the use of statistics in planning and development of Pakistan and how high-tech industries can be established in Pakistan by importing the latest statistical techniques, and by developing new indigenous technologies based on recent advances in Pakistan. The founding President of ISOSS Dr Munir Ahmad and Vice-President of ISOSS Dr Mohammad Hanif Mian spoke in the opening session. All the speakers highly spoke of the groundbreaking work of Dr Shahjahan Khan, and the chief guest presented a crest to him to mark his



*Dr Munir Ahmed (left), former Minister Mian Shamim Haider presenting the crest of honour to Dr Shahjahan Khan, University of Southern Queensland, Australia*

remarkable contributions to the promotion and development of statistics.

In his address of honour Dr Shahjahan Khan highlighted how the perception of statistics has changed from a mere tool of calculation of numbers to making decisions in the face of uncertainty and taking a strategic role for government and business. He emphasised a more visible and dominant presence of statistics to be part of the solution of complex issues that humanity faces today. Statisticians are uniquely positioned to contribute significantly in addressing the burning problems of our time. Statistics has come up with solutions to many problems where other disciplines have failed.

One of the main attractions of the conference was to officially open the ISOSS House which has been recently constructed by ISOSS. The participants reflected on the dream of the founding President of ISOSS, Dr Munir Ahmad, and thanked everyone who contributed to the project financially and otherwise. The office of ISOSS has now been shifted to the ISOSS House and it has facilities for offices, a library, computer labs, training and meeting rooms etc. In the

next phase of the project, ISOSS plans to build facilities to accommodate visiting scientists and research workers to promote excellence in statistical teaching, learning and collaborative research.

The Business Session of the conference recommended unanimously that in Pakistan the National Statistical Council must be revived; the recently created Pakistan Bureau of Statistics should be properly manned by qualified statistical scientists; Pakistan should take necessary steps to meet the requirements for becoming a statistically advanced country. Furthermore the Government must work on international bodies particularly the UNO, UNDP etc. to invite local statistical experts from other countries as advisors; must establish Statistical Research Stations in each province for the discovery of new knowledge and development of new techniques; must conduct micro-censuses every alternate year for the updating of population growth; and must address an immediate need for an International Journal of Official Statistics.

**Dr Munir Ahmed,**  
Founding President of ISOSS ■



# Julian Robert Leslie, 26 December 1948 – 15 October 2010

In Memoriam



Julian Robert Leslie.

**Julian Leslie was born in Melbourne, Victoria, in 1948. At the time of his birth his father was attached to the Division of Forest Products, Section Division of Mathematical Statistics, CSIR (which was to become the Commonwealth Scientific and Research Organization in the following year). In 1954 the young family moved to England where Rupert was to work with the renowned statistician Ronald Aylmer Fisher. There is a photo on Macquarie University's website of Fisher with the young Julian and his sister from that time, surely a portent of things to come.**

Julian was educated at North Sydney Boys High School, and the University of Sydney. From 1970 to July 1972 he was the first PhD student of Chris Heyde within the Statistics Department of the Australian National University. Julian interrupted his work on the dissertation for an ANU exchange visit to Moscow State University until June 1973, when he took up till 1974 a temporary lectureship in Statistics at the University of Lancaster, U.K.

In the period 1974-1990 he was Lecturer in Statistics, Birkbeck College, University of London. During his time at Birkbeck, Julian admired the scholarship, wisdom and integrity of Professor Philip Holgate, a man of broad cultural interests and unassuming and gentle manner.

Julian came to Macquarie University, Sydney, as Lecturer in Statistics in July 1990. He was soon promoted to Senior Lecturer and served in this capacity 1991- 2003. In 2003 he was appointed Associate Professor in Statistics.

At Macquarie University, Julian embraced the most difficult and time-consuming of administrative chores, and devised and taught many new subjects, statistical and otherwise, in order to maintain or improve student and therefore staff numbers. He was at work mostly by 7am, and rarely left before 7pm.

Nevertheless, at the onset of his illness, Julian was involved in joint research in Forensic Statistics (distinguishing the type of pencil used in handwriting, and "handedness") and "Speed Dating".

He kept a diary which revealed that the illness/tumour which eventually killed him took hold in late May 2009. A final email to one of us is dated 9th June; Julian had been working on Francis Galton, and wanted to be informed of the Galton Conference to be held in London in 2011. He was diagnosed with a brain tumour early in the September following, and underwent radiation therapy and immunotherapy subsequently. Nevertheless, the last months of his life saw

the progressive loss of the skills by which a human being defines himself. He was supported by the loving care of his family, and frequent visits from his many friends and colleagues, with whose welfare he characteristically continued to be concerned. Happily, he was able to walk his daughter Annette down the aisle on her wedding day.

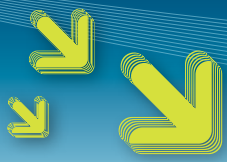
Julian felt strongly that it was a human right to die with dignity. When doctors told him he had only weeks to live, the family took time to travel around Europe together, visiting all the places which held special meaning for them. Even in his last days he never ceased to marvel at the beauty of his surroundings. He was particularly enthralled by the cities and cathedrals which his family visited. At the end his wife Andrea whom he had married on 28th January 1972, his children Annette and Daniel, and his siblings Michael and Elisabeth, were at his death, which was aided by Dignitas, in Zurich, Switzerland.

A very moving Memorial Service for Julian was held at Macquarie University on Friday November 12, 2010. Julian was a gentle, modest, thoughtful, generous, loyal person, with a strong and principled social conscience who put the welfare of others above his own. We conclude our tribute with the words which another colleague addressed to him:

**"You left the world a better place than you found it."**

**Eugene Seneta and Barry Quinn.**

The original version of this obituary was published on the ISI website <http://www.isi-web.org/membership/obituaries> ■



# ISI 2011

58th Congress - Aug 21st - 26th

DUBLIN



[www.isi2011.ie](http://www.isi2011.ie)

The ISI has held biennial Congresses since 1853 and recent sessions have attracted over 2,500 delegates. Participants include academics, government and private sector statisticians and related experts from various institutes.

The Central Statistics Office, Ireland, invites you to participate in the 58th World Statistics Congress of the International Statistical Institute (ISI) which will be held in Dublin from 21st to 26th August 2011.

The Scientific Programme of the 58th Congress will offer delegates innovative and stimulating topics with well-balanced presentations. A key feature of the 58th Congress will be the special Theme Day to be held on Wednesday 24th August, where papers will be devoted to statistical issues relating to Water and Water Quality.

The 58th Congress will be held in the Convention Centre Dublin (CCD), Ireland's new world-class, purpose-built international conference and event venue. The CCD is located in Dublin's city centre, on the banks of the River Liffey.



# Canberra Branch News

Rohan Baxter



**The 2010 Knibbs lecture was presented by Neville Weber, Professor of Mathematical Statistics at the University of Sydney, on Nov 23 at ANU. The topic was scaling of examination scores for University admission purposes with a focus on NSW. The two discussants provided an ACT perspective. They were Helen Strauch, Executive Director, Office of the Board of Senior Secondary Studies for the ACT and Warren Muller from CSIRO Mathematics, Informatics and Statistics and a past member of the Board of Senior Secondary Studies for the ACT.**

The Australian Tertiary Admissions Rank (ATAR) is a percentile ranking used by universities to assist in the selection of school leavers. It is reported with the range of 99.95 for the highest ranked students down to 0.00.

The motivation behind the scaling was first presented. Scaling is required to avoid any advantage or disadvantage by the choice of courses by a student. In NSW there are 112 eligible courses with 27,661 different combinations of courses taken by students in 2009. Course results are reported in 6 bands with band descriptors for different subjects developed in isolation. There is no attempt to have an 80 in English represent the same standard as an 80 in Visual Arts or Physics. An important outcome of scaling is that there are no "easy" or "hard" courses with respect to influencing an ATAR ranking.

Neville also provided a historical review. Highlights included 1964 when University quotas were first introduced, various changes in administrative arrangements between Universities and the Board of Studies, plus acronyms such as TES, TER, UAI and now ATAR. An increasingly national perspective has evolved from 1994 until now, with increasing convergence. I am sure it was interesting for those in the audience with a past Australian university admission ranking to reflect on how their raw marks were scaled based on the year and state/territory applicable to them.

The technical details were then provided for the steps from raw scores to percentile

ranks. The raw scores in NSW are the school assessments and the examination assessments. For each subject, the examination assessments moderate the school assessments while maintaining the original student ranking for the school assessments. The result is that moderated scores are comparable for a course across the state.

The next step is to scale course scores so the scores across courses reflect a similar achievement despite the differences in numbers and aptitude of students enrolled in particular courses. **The course marks are first standardised to a mean of 25 and standard deviation of 12. The model for the scaling algorithm specifies that the scaled mean in a course is equal to the average academic achievement of the course candidature. For individual students the measure of academic achievement is taken as the average of the scaled marks in all courses completed.**

The scaling algorithm involves solving a set of simultaneous equations. Work by Eugene Seneta on non-negative stochastic matrices shows a unique solution is available. **The derived standardised means and standard deviations are then used in a non-linear transformation to adjust individual scores. Other adjustments are made if the maximum scaled score is less than the maximum possible scaled mark.**

The scaled scores for the 10 units can then be added to give a score out of 500, but more importantly a rank for the Year 12 cohort. This rank is then adjusted to provide a rank for Year 12 students as if all students from Year 7 had proceeded to Year 12. This is estimated by using the Year 10 School Certificate results to relate the two cohorts. For a nationally coherent approach where different states/territories have different participation rates there are procedures based on regression models used by other states.

Neville described some of the communication issues arising from the use of scaled scores in the sensitive area of university admissions. Examples covered how HSC scores are reported as bands, while the raw scores, when scaled, can

lead to quite different ATARs even when the HSC results for two students look similar. There can be also confusion over which units get included in the ATAR calculation. An example was given where a mark in Latin (with a competitive, narrowly selected cohort) will scale differently to a mark in Legal Studies (a broader more heterogeneous cohort).

A number of studies that evaluated whether ATAR met its goal of being a predictor of success at tertiary studies were mentioned. ATAR is positively correlated with successful tertiary studies. It does better than just Maths or English scores alone which is an alternative approach.

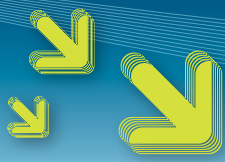
Throughout the talk, Neville acknowledged key contributors to this area including George Cooney, Daryl Daley, Eugene Seneta, Tim Brown and Rob Hyndman. Some references with the details of the scaling algorithms were given and included:

<http://www.uac.edu.au/documents/atar/2009-ScalingReport.pdf>

[www.boardofstudies.nsw.edu.au/](http://www.boardofstudies.nsw.edu.au/)

Rohan Baxter ■





Richard Gerlach  
(President) & Boris Choy  
(Honorary Secretary)

## NSW Branch News — J.B. Douglas Postgraduate Awards and Annual Dinner 2010

**The 11th J.B. Douglas Postgraduate Awards Day was held at the Macquarie Graduate School of Management on Thursday, 25 November 2010. Six postgraduate research students from universities in NSW competed with one another for fame and glory in statistics generally, but principally for the prestigious J.B. Douglas Awards. The students presenting and competing on this day were:**

Anna Campaign – School of Mathematics & Statistics, University of Sydney

Qian Chen – Discipline of Operations Management & Econometrics, University of Sydney

Diane Hindmarsh – Centre of Statistical & Survey Methodology, University of Wollongong

Xiuyan Mun – Australian School of Business, University of New South Wales

Paul Rippon – School of Mathematical & Physical Sciences, University of Newcastle

Joanna Wang – School of Mathematics & Statistics, University of Sydney

Each talk was carefully and professionally assessed by the judges – Richard Gerlach, Alun Pope and Kevin Wang – on scientific quality, quality of presentation and time management. The judges commented extensively on the excellent quality and professionalism of all presenters and presentations. Eventually, in a very close call, the main prize was shared between Anna Campaign, Paul Rippon and Joanna Wang who jointly shared the 11th J.B. Douglas Postgraduate award, each receiving a cash prize of \$1,000. Congratulations to all presenters on their excellent and impressive presentations.

Some of the presentation slides can be downloaded from

<http://www.statsoc.org.au/nsw-branch-meetings.htm>



*Participants at the 2010 J.B. Douglas Postgraduate Awards with Richard Gerlach: (L to R) Diane Hindmarsh, Qian Chen, Paul Rippon (back), Joanna Wang (back), Anna Campaign and Xiuyan Mun.*

The J.B. Douglas Postgraduate Awards Ceremony could not be such a wonderful success without the generous sponsorship from (in alphabetical order):

- KPMG,
- Department of Statistics, Macquarie University,
- SAS,
- Discipline of Operations Management and Econometrics, University of Sydney,
- School of Mathematics and Statistics, University of Sydney,
- Department of Mathematics Sciences, University of Technology Sydney,
- School of Economics and Finance, University of Western Sydney,
- Statistical Society of Australia, Inc. (NSW Branch)

The J.B. Douglas Postgraduate Awards Day was concluded with the Annual Dinner. As the guest speaker, Alun Pope talked about "How much are Australian houses worth?" More than 50 attendants enjoyed the talk and a lively discussion was held afterwards, continuing onwards and combined with top notch food, wine, company, etc. It was a wonderful evening and the best attended in many years.

The 2011 J.B. Douglas Postgraduate Awards Ceremony will be held as usual towards the end of November and we look forward again to your involvement, support and generous sponsorship.

## NSW Branch News cont.

Richard Gerlach  
(President) & Boris Choy  
(Honorary Secretary)



### TRAVEL SPONSORSHIP FOR YOUNG STATISTICIANS TO ATTEND THE 20TH AUSTRALIAN STATISTICAL CONFERENCE 2010 IN FREMANTLE, PERTH

The NSW branch proudly supported a group of young statisticians to attend the Australian Statistical Conference in 2010. The branch received an overwhelming 10 applications for travel support to ASC2010 in Fremantle, WA. Five successful applicants were carefully selected to receiving a travel sponsorship, they were: Miss Joanna Wang, Miss Emi Tanaka and Mr Justin Wishart of the School of Mathematics & Statistics, University of Sydney, Miss Qian Chen of the Discipline of Operations Management & Econometrics, The University of Sydney and Mr Frances Garden, Sydney School of Public Health, The University of Sydney. They each presented their high quality research work in either oral or postal forms at ASC2010. Frances, Emi and Qian have kindly shared their experiences with the readers of the SSAI newsletter:

**Mr Frances Garden – School of Mathematics & Statistics, The University of Sydney**

I'd like to thank the NSW Branch of the SSAI for sponsorship to the ASC2010 in Perth. I thoroughly enjoyed the conference – 4 days full of great statistics. I found the keynote and plenary session speakers really inspirational. I enjoyed listening to these speakers share their experiences, results and how their research evolved. It was great to hear from international and national speakers to find out what statistics people are using around the world and here in Australia. There was a wide variety of talks at the conference. During the concurrent sessions I often found it hard to choose which speaker I wanted to listen to because there were so many interesting talks on at the same time. Overall, I learnt a lot at this conference. I'm really glad I



Guest Speaker of the Annual Dinner 2010: Alun Pope.

got to hear about new statistical models being developed, how others are applying statistical models to their data and how statistical analysis is being completed through different computer programs. I have come away from the conference with a list of things I want to try with my own data and research and the inspiration to have a deeper understanding of the statistical models I'm currently using.

**Miss Emi Tanaka – School of Mathematics & Statistics, The University of Sydney**

ASC2010, held in Fremantle, has been an interesting and informative experience. It gathered an array of leading Australian statisticians as well as well-known International speakers. ASC 2010 was officially opened by Prof. Barry Marshall who, to my surprise and delight, gave a biologically skewed talk. One of the most memorable talks to me was by Dr. Gordon Smyth, who gave a well-paced talk that included a solid and easy-to-understand introduction to genetics. There were a range of statistical topics each day and listening to various speakers gave me much awareness of their knowledge and expertise. It was great to have common ground to communicate with one another with thanks to the great organisation of the ASC program, which scheduled a free afternoon to explore and enjoy Fremantle and Perth. On the last day of the ASC, a

forum was held that stimulated interesting discussions on the future of statisticians. We heard opinions from an undergraduate student to employers. Overall it was a great experience and I look forward to it again in ASC 2012.

**Miss Qian Chen – Discipline of Operations Management & Econometrics, The University of Sydney**

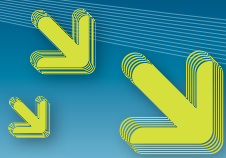
I gratefully appreciate the sponsorship of the NSW Branch for my trip to the ASC2010 in Perth with the other SSAI colleagues. ASC2010 is an international statistics conference in a wide range of topics in Bayesian statistics, finance, biostatistics, environment and climate, so on and so forth.

My talk was about Bayesian VaR and ES forecasting via the two-sided Weibull distribution. I presented in the session of Bayesian Statistics in Finance and received inspiring comments and feedbacks from the audiences and the colleagues. In this session, there were talks about stochastic volatility models and density estimations for financial returns, which are highly related to my current research. It was great pleasure to discuss shared research interest with the peer presenters.

The other sessions such as biostatistics, multivariate statistics and stochastic modeling are very interesting and attractive as well. By attending these sessions, I found more diverse application of statistics in the field of science and education, just as the theme of ASC2010—'understanding our world'.

It was a very important and meaningful trip, where I proudly presented my work as an SSAI member, my knowledge was updated and the network is expanded. Thanks to SSAI again for sponsoring this trip.

Richard Gerlach and Boris Choy ■



Helen Johnson

## QLD Branch News

**The QLD branch organised two events in late 2010. The first was a 'funny stats competition' for the Christmas 2010 event. There were 31 entries which came from all over the world. The winner of the \$200 Amazon voucher was Clive Osmond from the MRC Lifecourse Epidemiology Unit, University of Southampton, UK with the following question from a student at the end of a lecture on how to calculate the mean:**

"Thank you so much for the lucid explanation. Just one query: I know that this big sigma thing means "some of the x's". But, how do I know which ones to choose?!" In second place were 3 entries from the same person:

"(i) Q: What is meant by the term 'least squares regression line' "

A: The least squares regression line is the regression line that passes through the least number of squares"

"(ii) Q: When may you use a Z-test to test for a single population mean, when you only have a sample of size 10?

A: When  $10 \rightarrow 30$ "

"(iii) I once took over a course and introduced a question where a table of data with variables 'Sex' (Male or female), 'Distance' (from local cinema), 'Satisfaction' (Rating out of 10 of their satisfaction with the cinema) and 'Name' (name of movie they saw) and part of the question was to state whether each variable was nominal, ordinal or continuous. As it never had been asked before this caught a lot of people out, and many students resorted to matching up the variables with the categories at random. One girl told me that 'Sex is continuous but satisfaction is nominal!'"

The entry at third place was from a lecturer, whose friend was lecturing in statistics: "She started her lecture by showing an example where balls are drawn from an urn. She then said: '... but Statistics is not only about balls'. The whole auditorium was laughing. She then realised what she just said". Certainly all of them created some giggle effect.

The second event was a seminar by Prof. Denise Lievesley, who spoke on the power of comparative data. Denise was the visiting AMSI lecturer and sponsored by AMSI to visit Brisbane for a joint event held by ISSR (UQ), DAMC (QUT) and the QLD Branch of the Statistical Society of Australia (SSAI). Prof. Lievesley has campaigned for evidence based public policy within the UK and internationally Lievesley has been committed to protecting the integrity of official statistics and to ensure that they remain free from political influence.

Helen Johnson ■



## 2-DAY STATISTICAL WORKSHOP

# Adaptive designs for clinical trials

This workshop on adaptive design is proudly supported by the Australian Pharmaceutical Biostatistics Group (APBG), the Statistical Society of Australia (SSAI) and the George Institute.

This workshop takes advantage of Dr Brenda Gaydos' visit to Australia. Brenda is the Eli-Lilly specialist in adaptive designs, has a wealth of experience to share and has written several papers including one on Good Clinical Practice in this area. She will team-up with two leading researchers in adaptive designs, Dr Patrick Kelly of Sydney University, and Dr Frank Bretz of Novartis, Switzerland. Frank is an adjunct professor of the University of Hannover (Germany), and has published more than 100 papers and two books on multiplicity issues.

**6-7 April 2011**

**MGSM Executive Hotel and Conference Centre  
99 Talavera Rd, Macquarie Park 2113 Tel. 02 9850 9082**

Free access to MGSM's Security Car Park. The facility is approximately 10 minutes walking distance for Macquarie University railway station (<http://www.cityrail.info/timetables/#landingPoint>)

### DAY 1

A high level overview on adaptive designs including:

- What are they?
- Adaptive procedures in phase I-III trials including adaptive dose finding, treatment selection, sample size reassessment, combination of phase II-III trials;
- Process for designing adaptive designs;
- Regulatory aspects, operational and logistical issues;
- Examples of what to do and what not to do.

### DAY 2

Technical lectures on selected methods, each of them includes case study examples presented in Day 1.

- Response adaptive designs
- Group sequential trials and the link with adaptive designs
- Adaptive designs for confirmatory trials
- Regulatory issues
- Discussion

### TARGET AUDIENCE

This workshop is aimed at statisticians, clinicians, and other researchers engaging in clinical trials research. Prior experience with clinical trials is not necessary but will be helpful.

### REGISTRATION

There are separate registration costs depending upon whether the delegate is a full-time student, a member of the Statistical Society of Australia, and whether the registration is made before 18 March 2011.

Registration includes (morning and afternoon tea, lunch, course notes)

#### Early Bird Fees (Payment before 18 March 2011)

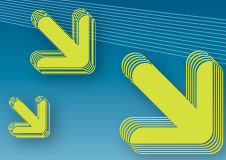
	1 Day	2 Days
SSAI Members:	\$700.00	\$950.00
Non Members:	\$700.00	\$1000.00
Students:	\$700.00	\$900.00

#### Regular Fees (Payment after 18 March 2011)

	1 Day	2 Days
SSAI Members:	\$800.00	\$1100.00
Non members:	\$800.00	\$1200.00
Students:	\$800.00	\$900.00

Online registration available on <http://www.statsoc.org.au/CPD23AdaptiveDesignsWS>





Julian Whiting

## SA Branch News

### OCTOBER MEETING

**The speaker for the October meeting of the South Australian Branch was Charles Pearce from Adelaide University. Charles talked about his research into statistical modelling of population growth rates in New Zealand during prehistoric times.**

Charles began the talk with a discussion on how there has long been debate regarding the timing of settlement of New Zealand. In recent years there has been popular belief of first settlement during the 12th or 13th centuries. To be consistent with estimates of the population size at the time of European settlement, the average annual population growth rate from settlement at this time would need to be around 1%. Such rapid population growth is inconsistent with population growth rates for other cultures at the same time in history. Charles then described how a study by Brewis, Molloy and Sutton (BMS), which used skeletal and fertility estimates, supports a much earlier settlement date.

The BMS skeletal data was derived from a sample of 172 skeletons and provided information on the age at death and total number of children produced by a woman. Charles explained how this information is obtained from skeletons, noting an additional problem in using these limited data is the likely under-representation of infant skeletons in the sample. Using a life-table approach and making some strong assumptions, BMS concluded there was a negative growth rate over the period related to the data. For his work, Charles has used the BMS data with a modelling approach requiring weaker assumptions than those used by BMS.

Charles described how he fitted relatively simple models for survival and cumulative fertility functions. The models for fertility and survival involved just two and three parameters respectively. Compared with the life-table approach, these models provide a more efficient use of the small dataset for the purpose of estimating the growth rate. Charles presented a graph of the estimated density function for fertility by age, highlighting how it displays the desired features for a fertility density. The survival function specified the probability of reaching age  $x$ , conditional on the probability  $p$  of already reaching age 15. This characterisation enabled estimation of the survival function without requiring knowledge of infant mortality, a quantity which can only be speculated.

Next Charles discussed how he estimated the population growth rate and confidence interval. This estimation used Lotka's formula, which relates the population growth rate with the survival and fertility functions and the probability of survival to age 15. Fisher information theory supplied approximate distributions for the parameters of the survival and cumulative

fertility functions, and using Monte Carlo methods confidence intervals for the growth rate were estimated. Sequences of the distribution parameters were generated by sampling from the joint distributions, and then solving for the growth rate for each sequence. Growth rate estimates and accompanying confidence intervals were calculated for a wide range of values of  $p$ , to cover various scenarios for the unknown underlying level of infant mortality.

Across the range of scenarios considered for infant mortality, the point estimates for the prehistoric growth rates were negative. Even under the scenario which had lowest infant mortality rate, most of the estimated 95% confidence interval covered a negative growth estimate. Charles concluded his talk with a discussion of his findings, noting the key underlying simplifying assumptions for his models. These assumptions included no correlation between the survival and fertility functions, homogeneity for population growth across New Zealand and stability over time for the fertility and survival functions. Nonetheless the results rely on weaker assumptions than those underlying previous modelling of the BMS data, and so provide further support for rethinking the possibility of a longer span for New Zealand prehistory. An in-depth discussion of this and other analyses relating to Oceanic migration is contained in a book Charles has recently published.

Julian Whiting ■

# VIC Branch News

Carol Soloff



## AGM

**The first major event for the Victorian Branch for 2011 will be our Annual General meeting on 5.15pm, Tuesday 22 March 2011 to be held at the University of Melbourne. VICTORIAN MEMBERS, PLEASE PUT THIS DATE IN YOUR DIARY.**

As well as reports on the year that was and the election of Branch Committee members, the meeting will feature a presentation from Nicole Watson, Deputy Director, Household, Income and Labour Dynamics in Australia (HILDA) Survey. Nicole has worked on this major household-based longitudinal survey, which began in 2001, for the last 10 years. Prior to this, Nicole worked at the Australian Bureau of Statistics, the Victorian Department of Human Services, and Data Analysis Australia.

Nicole's presentation is on *Re-engaging with survey non-respondents: the experience of three household panel surveys*. Previous research into the correlates and determinants of non-response in longitudinal surveys has focused exclusively on why it is that respondents at one survey wave choose not to participate at future waves. This is very understandable if non-response is always an absorbing state, but in many longitudinal surveys, and certainly most household panels, this is not the case. Indeed, in these surveys it is normal practice to attempt to make contact with many non-respondents at the next wave.

This study differs from previous research by examining the process of re-engagement with previous wave non-respondents. Drawing on data from three national household panels (from Australia, Britain and Germany) it is found that the re-engagement decision is indeed distinctly different from the decision about continued participation. Further, these differences have clear implications for the way panel surveys should be administered given the desire to enhance overall response rates.

## 2010 SEMINARS

During 2010 we ran a very full seminar program. In particular, instead of finishing

### THE ANNUAL GENERAL MEETING OF THE VICTORIAN BRANCH OF THE STATISTICAL SOCIETY OF AUSTRALIA WILL BE HELD ON

**Tuesday 22nd March, 2011 at The University of Melbourne.**

Program:

5:15pm – Light refreshments will be available in the Staff Tea Room, Richard Berry Building, from 5:15 onwards.

5:45pm – AGM, Theatre 2, Old Geology Building.

6:15pm – Seminar in Theatre 2, Old Geology Building.

the year with the annual Belz lecture in October, two further seminars were held in November and December.

### SMALL-DOMAIN ESTIMATION FROM STATISTICS WITH MEASUREMENT ERROR



Alan Zaslavsky.

on National Statistics of the US National Academy of Sciences and a Fellow of the American Statistical Association.

Alan's research into small-domain estimation arose from his work on official statistics where there was often a need to create such estimates from large administrative, census, or survey datasets. These datasets measure some important variables but contain an amount of non-sampling error. Supplementary information from a smaller survey may make it possible to estimate models for this measurement error and then correct or calibrate small-domain estimates.

The November seminar was presented by Alan Zaslavsky, Professor of Health Care Policy (Statistics) in the Department of Health Care Policy at Harvard Medical School. Alan is a member of the Committee

Alan illustrated this general approach with three examples, each requiring a different model structure appropriate to the form of the available data and the error process.

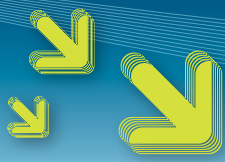
The first example involved imputing under-reported treatments using multiple sources of treatment information in a colorectal cancer services study. Colorectal cancer is the second most common cause of cancer mortality in the US, with 55,000 deaths per year.

The sources of information included the California Cancer Registry data, with around 14,000 records, and a physician follow-up survey in 3 Registry regions, with about 1500 records. Both of these sources underreported the treatments that had been used, though the data were more complete from the survey.

The first approach to improving the estimates of the proportion receiving chemotherapy just used a simple correction based on:  $P(\text{reported chemo}) = P(\text{chemo}) \times P(\text{report} | \text{chemo})$  to calculate  $P(\text{report} | \text{chemo})$  for the survey and apply this to Registry data. This of course assumes that reporting is similar across the regions.

A more sophisticated approach used logit or probit model-based methodology with chemotherapy as the outcome and took into account the patient and hospital characteristics available in the datasets, and included a random effect for each hospital. A similar model (with or without the random effect) was used for the >>





Carol Soloff

## VIC Branch News cont.

reporting of the given treatment. Two versions of the hierarchical model were used: (a) single random effect (for treatment) and (b) bivariate random effect (for treatment and completeness of reporting).

The results showed that the effects were broadly similar to those in the survey analyses, with a volume effect on reporting but not on the chemotherapy treatment and with a lower chemotherapy rate outside the survey region. There were substantial hospital random effects in both reporting and treatment rates – the indication of substantial unexplained variation is a problem from the health services standpoint!

These models were used in assorted applications – for example, using multiple imputation analysis of the effect of chemotherapy on survival. First, an underreporting model was fitted including 2-year survival as a predictor of chemotherapy. Then, using the imputed corrected chemotherapy, a model was fitted with chemotherapy (and other variables) as a predictor of survival. There was a significant positive effect (odds ratio = 1.26) of chemotherapy on survival.

Alan noted that the survey was not designed to calibrate the state-wide sample, as it was limited in both area and time period, and forced them to assume that there was no systematic variation in reporting by area. The solution would be to undertake a review of hospital records in a systematic state-wide sample. This would then be generalisable to the entire state and would allow for estimation, identification and correction for hospitals with poor reporting and enable problems/ circumstances affecting reporting to be identified.

An extension of the analytical work involves jointly modelling two outcomes (chemo and radiation therapy) with underreporting. A similar model takes into account the fact that the outcome of radiotherapy could affect the reporting of chemotherapy, and this can be included as a predictor in the regression model. There are possible correlations at the hospital and individual level – hospital correlations were modelled using the sum of the covariance matrix of random effects and the individual correlations by bivariate probit (correlated latent variables). Results showed strong individual-level correlations between therapies – if you have one treatment, you are



Alan Zaslavsky presenting his models on sampling errors in statistical analysis.

very likely to have the other – but only weak correlation at the hospital level.

Alan mentioned the ongoing work of CanCORS (Cancer Care Outcomes Research and Surveillance) which he felt was more like "Can't Complete On Required Schedule", with it being an 8-year project already! This is looking at combining multiple data sources – medical records, patient survey, registry data and Medicare claims. This will provide an opportunity to infer a more accurate status of what treatments have been received, though similar issues arise for comorbidity, staging etc with fallible sources.

The simplest model to fit is a loglinear model with covariates, though it is only one of several possibilities. Several models were specified, which including varying numbers of interaction terms. Results reflect the fact that none of the data sources are a "gold standard", which means the models are more sensitive to the assumptions that are made. For example, overreporting is a concern – a number of people think they have had a treatment when they haven't.

The next example Alan gave was using a short

screening scale for small-area estimation of mental illness prevalence for schools. The background to this is the heavy burden of mental illness, due in part to early onset and persistence, and that early detection and treatment could help. Therefore mental health services to adolescents could help prevent a "cascade" of disorders and could be relatively simply and cheaply administered through screening at schools using a simple instrument to identify young people in need of further diagnosis using more expensive tools.

Alan outlined the measures involved: the expensive "gold standard" 2 hour clinical interview with each child and parents, and a 2 hour interview using the Comprehensive International Diagnostic Instrument (CIDI) administered by a trained lay interview which has good predictive power – neither which are feasible to administer at schools. In contrast the Kessler 6 (K6) screening scale is a well known 6-item scale with 5 response categories that can be self-administered and can be cheaply done at any school (eg "How often did you feel: nervous; hopeless; restless or fidgety": etc).

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## VIC Branch News cont.

Carol Soloff



The data for this second example came from the National Comorbidity Survey with 9244 students, complemented by 347 clinical interviews that assesses Serious Emotional Distress (SED). Again probit regression was used for  $P(\text{SED} | \text{CID1 measures})$  and then the linear predictor of this model was related to the K6 results using a bivariate multilevel model which allowed for both school (size, public/private) and individual (age, sex, race, school entrance age) effects.

As might be expected, there was substantial school-level variation. The correlation between K6 and SED effects was 0.544 at the individual level (responses were very idiosyncratic) but 0.845 at the school level – Alan feels that this latter result has real meaning. In terms of predicting the SED rate from the K6, the model with this correlation demonstrated the potential for useful predictions of school-level SED prevalence using data from the short screening scale, as well as the benefits of these school-level predictions for improving predictions for individual students in these schools.

Alan's final example was combining census, dual system estimation and evaluation of study data to estimate population shares. As with all population censuses, there is systematic under/over counts of particular population subgroups that has been a contentious issue in the US since the 1980s. For the 1990 census, efforts to measure the undercount included a post-enumeration survey which was used in dual system estimation to assess the under/overcoverage by poststratum, and evaluation studies to assess biases of the dual system estimates.

The dual system estimates (DSE) of census error were collapses into 13 evaluation poststrata and expressed as relative error of population shares. The evaluation study estimates of DSE bias were empirical estimates of error with external controls to totals from demographic estimation. Variance estimates, which include a mixture of sampling variance and subjective Bayesian variance (depending on how the demographic model was chosen) were examined for both estimates.

Bayesian modelling was used to help "shrink" the variance when undertaking bias correction, using parsimonious models because of the small number of areas.

In summary, Alan stated that it is common to use large datasets, together with small samples for validation/calibration/bias estimation. However, the specifics of the models can vary tremendously, with the level of aggregation of the data sources driving the structure of the models. Hierarchical models will almost always be appropriate to synthesise information from multiple sources, as these can represent population structures and assist with the shrinkage of noisy estimates.

After the seminar, a number of us joined Alan for a meal at "our usual" post-Stats Seminar restaurant.

### THE POWER OF COMPARATIVE DATA



*Professor Denise Lievesley*

On 20 December 2010, Professor Denise Lievesley, from King's College London, presented a Public Lecture, jointly run by the SSAI Victorian Branch and the Australian Mathematical Sciences Institute,

on the power of comparative data.

Professor Lievesley is one of the UK's leading social statisticians. She has campaigned for evidence to be used as the basis for the development of sound public policies within the UK and more widely. She has been a founding Chief Executive of the English Information Centre for Health and Social Care, Director of Statistics at UNESCO (where she established its new Institute for Statistics), and Director of the UK Data Archive (and simultaneously Professor of Research Methods in the Mathematics Department, University of Essex).

Most recently Denise was a special advisor at the African Centre for Statistics of the

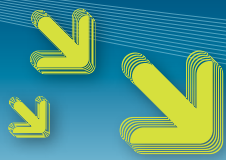
UN and was based in Addis Ababa. Her various roles have led her to work with ministers, ambassadors, senior civil servants and officials of international agencies, for which she has established a reputation for upholding the principles of professional integrity, policy relevance and methodological transparency. Throughout her working life, Professor Lievesley has been committed to protecting the integrity of official statistics and to ensure that they remain free from political influence. Denise is the Head of the School of Social Science and Public Policy, King's College London.

Denise spoke about the challenges of collecting cross-nationally comparable data and the arguments for doing so. She described different models of comparability, ranging from the post hoc methods employed by international agencies (drawing on her experience in the UN) that aim to obtain globally comparative data, through to surveys based on harmonized methodologies.

One of the best examples of such a quality cross-national survey is the European Social Survey (ESS). The central aim of the ESS is to gather data about changing values, attitudes, attributes and behaviour patterns within European polities. Academically driven but designed to feed into key European policy debates, the ESS hopes to measure and explain how people's social values, cultural norms and behaviour patterns are distributed, the way in which they differ within and between nations, and the direction and speed at which they are changing.

Given the seminar was held in the week just prior to Christmas, the seminar was reasonably well attended, and the audience benefited from hearing Denise's experience in this important area.

Carol Soloff ■



Suzanne Brown

## WA Branch News

### Acute Myocardial Infarction

VLAD for AMI Mortality by hospital of first presentation



Variable Life Adjusted Display (VLAD) graph for AMI mortality shows those patients who presented firstly at a country or general hospital do not have worse mortality than those who present first to a tertiary hospital in SMAHS after adjusting for co-morbidities and other confounding variables.



### PREVENTING THE NEXT DR DEATH

**Dr Sharon Evans is a biostatistician with over 20 years experience in clinical research in New Zealand and Western Australia. Since 2008, in her role as Manager of Clinical**

Governance for the South Metropolitan Area Health Service in Perth, she has been responsible for overseeing the practice of defensible accountability in the clinical governance of the health system, through collaboration with clinicians and information linkage from a range of sources. The ultimate objective is assuring the public that a safe and efficient service is being provided by the WA Health Department or, in Sharon's words at the November meeting of the WA Branch, "preventing the next Dr Death".

Sharon outlined how this accountability works by identifying hospitals, departments and doctors who are not performing as expected. The media have provided extensive coverage of the problems for patients and hospitals when there is a Dr Death working in the system as happened in Bundaberg, Queensland in 2005. WA Health monitors clinical outcomes, identifying poorly performing clinicians before they do too much damage to patients. Central to these investigations is the use of the VLAD technique (Variable Life Adjusted Display) popularised by Queensland Health after the enquiry into Bundaberg Hospital.

The process gives a graphical overview over time in the form of a control chart, specifically a "cumulative risk adjusted mortality" (CRAM) chart, which allows for rapid detection of potential problems. The cumulative difference between

expected and actual mortality, or other outcome, over a series of patients is calculated for a moving window of 12 months, and the CUSUM sequential testing tool is used to monitor run length. As well as answering burning questions such as "Do I need to travel directly to Royal Perth if I have my heart attack in Safety Bay or should I stop off at Rockingham Hospital?", this type of monitoring can lead to the propitious discovery of "better than expected" outcomes, highlighting examples of clinical practice that serve to improve best practice across the health system.

Dr Evans' talk was kindly hosted by UWA's School of Population Health, and was followed by dinner at a local Vietnamese restaurant.

Suzanne Brown ■





# Australian Statistical Conference

# 9 – 12 JULY 2012

Adelaide Convention Centre

To register your interest please visit our website: [www.sapmea.asn.au/asc2012](http://www.sapmea.asn.au/asc2012)



# “SAVE THE DATE”