The Statistical Society of Australia
News

SSAI

ASC-IMS 2014 CONFERENCE
7-10 July

In this issue

The Australian Statistical Conference, to be held in conjunction with the Institute for Mathematical Statistics annual meeting, will be held in Sydney, in July, later this year. The biennial conference is the premier event in the SSAI calendar and this conference, ASC-IMS 2014, will be held at the beautiful and historic Australian Technology Park, located in Eveleigh, Sydney. The web address for ASC-IMS 2014 is www.asc-ims2014.com.

The Program Committee, chaired by A/Prof Scott Sisson, has organised a very high quality cast of international and local speakers across all areas of Statistics, including: Prof Terry Speed (recipient of the Prime Ministers Award for Science), Prof Sheila Bird, Prof Adrian Baddeley, Prof James Brown and Adj Prof Bob Rodriguez. The IMS has a parallel Program Committee, chaired by Prof Jianqing Fan, which has further enhanced the program with keynote speakers including Prof Thomas Kurtz (Wald Lecturer) Prof Terry Lyons (Schramm Lecturer), Prof Peter Donnelly (Neymann Lecturer) and Medallion Lecturers Dr Martin Hairer, Prof Nina Gantert, Prof Timo Seppalainen, Prof Harrison Zhou, and Prof Maththew Stephens. The line up of speakers and talks is quite outstanding.

The conference program includes 15 keynote sessions and 8 parallel sessions each day over 4 days, as well as a special informal evening session devoted to poster presentations, where attendees can relax, socialise and peruse the posters in a convivial setting over drinks and nibbles.

Terry Speed

The conference dinner will be held on a Captain Cook Dinner Cruise around Sydney Harbour

EDITORIAL

Happy New Year everyone! The Editors hope you have been able to have a bit of a break over the Christmas-New Year period, and that you're able to face the demands of 2014 in a refreshed manner.

The International Year of Statistics is behind us now, so what is there to focus our statistical energies on in its place? We'd like to suggest some shorter-term thinking, as there are a number of "weeks" or "days" that could be used to highlight the place of statistics in daily life. Try Big Data week (5 – 11 May), or Pi Day (22 July) for a start. Let us know if you come across any others of interest to the statistics community!

This issue of the newsletter has a comprehensive set of reports from branches about their end-of-year activities, as well as highlighting our Society's conference for which the early bird deadline is only days away. We thanked our 2013 contributors at the end of last year, and so we start the new year with a message of encouragement to new contributors. The newsletter will only ever be as great as the contributions made! Consider writing something for the newsletter this year – be it a short theoretical item, a report of an event, a memorable activity you used with learners of statistics, or even a puzzle. Were there interesting papers published in your field of statistics in 1914 (one hundred years ago) or 1964 (fifty years ago)? It would be great to bring them to the attention of members through the Newsletter.

Don't forget about the conference in July. We hope as many of you as possible will be there, and our lead article this issue reminds you of the great program that the organisers have put together. Hope to see you there!

Alice Richardson

and **Michael Adena**

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

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EVENTS

METHODOLOGICAL ISSUES IN ORAL HEALTH RESEARCH 2014

6th International Dental Biostats Conference
1-3 April 2014, University of Adelaide

12TH INTERNATIONAL CONFERENCE ON DATA ENVELOPMENT ANALYSIS 14-17 APRIL 2014, KUALA LUMPUR, MALAYSIA

4th Annual International Conference on Operations Research and Statistics (ORS 2014)
28-29 April 2014, Phuket, Thailand

STATISTICAL CHALLENGES IN 21ST CENTURY COSMOLOGY, IAU SYMPOSIUM 306

25-29 May 2014, Lisbon, Portugal

SUMMER SCHOOL ON MODERN METHODS IN BIOSTATISTICS AND EPIDEMIOLOGY

8-21 June2014, Cison di Valmarino-Treviso, Itlay

34THINTERNATIONAL SYMPOSIUM ON FORECASTING – ECONOMIC FORECASTING: PAST, PRESENT AND FUTURE

29 June- 2 July 2014, Rotterdam, The Netherlands

FOURTH BIENNIAL INTERNATIONAL STATISTICAL ECOLOGY CONFERENCE (ISEC2014)

1-4 July 2014, Montpellier France

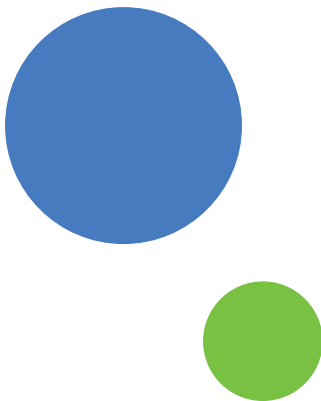**AUSTRALIAN STATISTICAL CONFERENCE (ASC2014)/IMS ANNUAL MEETING**

7-10 July 2014, Sydney

ISBA 2014 - TWELTH WORLD MEETING OF ISBA

14-18 July 2014, Cancun, Mexico

2014 COMBINED IUFRO AND SOCIETY OF AMERICAN FORESTERS AND CANADIAN INSTITUTE OF FORESTRY WORLD CONGRESS MEETING WITH DAVID BRILLINGER AND ABDEL EL-SHAARAWI

8-11 October 2014, Salt Lake City, USA

Adrian Baddeley

Thomas G Kurtz

The social program includes the conference dinner, to be held on a Captain Cook Dinner Cruise around Sydney Harbour, as well as a Young Statisticians dinner. The conference organising firm has obtained discounts on various tours in and around Sydney, as well as to major attractions outside NSW (for those very keen tourists).

There are four satellite events organised around the time of ASC-IMS 2014, including workshops on ABC methods (UNSW, 3-4 July) ; R and R studio (UTS, 6 July); correspondence analysis (UTS, 6 July); and semi-parametric regression (UTS, 11 July).

The early bird registration deadline has unfortunately expired as of February 28. However, standard registration is available up until July 3, after which onsite registration fees apply. See http://ims-asc2014.com/registration-page/ for more detail. The LOC expect upwards of 500 participants to attend ASC-IMS 2014 in total. As of February 19, still 10 days before the early bird deadline, there were over 170 paid registrations, and numbers are expected to rise rapidly as the earlybird deadline approaches.
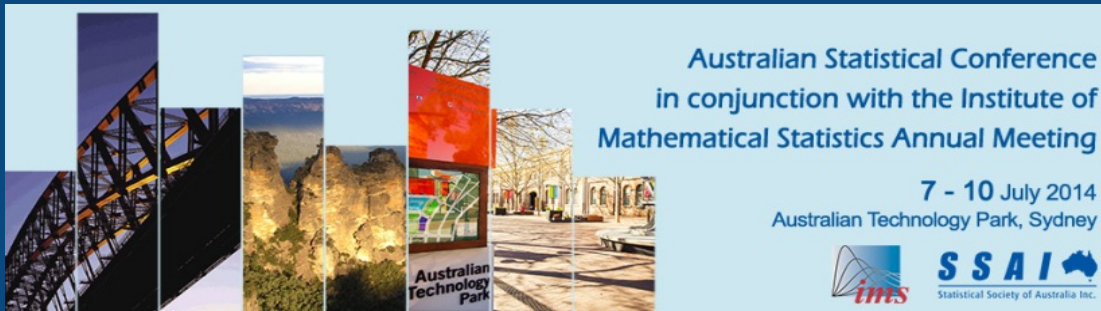
The Local Organising Committee very much looks forward to welcoming you to Sydney and to ASC-IMS2014 in July. Any enquiries you may have about ASC-IMS 2014 can be directed either to asc-ims2014@arinex.com.au or to Richard.Gerlach@sydney.edu.au

Richard Gerlach
Geoff Lee
Co-chairs, LOC, ASC-IMS 2014
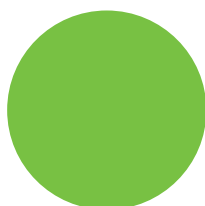
Australian Statistical Conference
in conjunction with the Institute of
Mathematical Statistics Annual Meeting
7 - 10 July 2014
Australian Technology Park, Sydney

On behalf of the Statistical Society of Australia and the Institute of Mathematical Statistics, the Organising Committee invites you to register for the joint

Australian Statistical Conference and IMS Annual Meeting
7-10 July 2014 in Sydney

Keynote speakers include:
- **Professor Terry Speed,** *2013 winner of the Prime Ministers Award for Science*
- **Professor Adrian Baddeley,** *CSIRO & University of Western Australia*
- **Professor Sheila Bird,** *Cambridge University*
- **Professor James Brown,** *University of Technology*
- **Bob Rodriguez,** *SAS Institute*
- **Professor Terry Lyons (Schramm Lecturer),** *University of Oxford*
- **Professor Peter Donnelly (Neyman Lecturer),** *University of Oxford*
- **Dr Martin Hairer (Medallion Lecturer),** *University of Warwick*
- **Professor Dr Nina Gantert (Medallion Lecturer),** *Technische Universität München*
- **Professor Timo Seppalainen (Medallion Lecturer),** *University of Wisconsin-Madison*
- **Professor Thomas Kurtz (Wald Lecturer),** *University of Wisconsin-Madison*
- **Professor Harrison Zhou (Medallion Lecturer),** *Yale University*
- **Professor Matthew Stephens (Medallion Lecturer),** *The University of Chicago*

Book now to reserve your place!

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PRESIDENT'S COLUMN

Statisticians and Mathematicians

On Monday and Tuesday of this week I attended the annual members' meeting of the Australian Mathematical Sciences Institute (AMSI) and the Australian Council of Heads of Mathematical Sciences (a much less pronounceable ACHMS). In both cases I was representing the Statistical Society of Australia.

Both AMSI and ACHMS are largely academic in their orientation. Until recent years the members of AMSI were exclusively universities and ACHMS was set up to provide a forum for heads of university schools or departments. Both have become more inclusive in recent years, particularly reaching out to the learned mathematical societies such as ours.

As someone with one toe in the academic world (it would exaggerate to say I have a foot in it) and as a statistician I found the environment of the meetings challenging. The Statistical Society has roughly half its members outside of academia, and many members who are in academia are not in mathematical science departments – they might, for example, be in a medical school as epidemiologists, a business school as econometricians or in an agriculture faculty as biometricians.

To me the involvement of the Statistical Society with AMSI and ACHMS provides as many opportunities as problems. I strongly believe that statisticians can share with the wider mathematical community our experiences in relating to "the real world".

Our accreditation system is one example where we lead the mathematical community. This has been possible because we have a reasonably clear idea of what a statistician might be doing outside of academia, and as I explained to ACHMS, "an Accredited Statistician is safe to let loose on society". The attempts by the Australian Mathematical Society in accrediting courses have not been successful and, in my view, the current projects on developing Threshold Learning Outcomes in mathematics are problematic since there is no clear idea of what a mathematics graduate should look like.

AMSI in particular has expressed an interest in greater involvement by the Statistical Society, perhaps including membership. My feeling is that this will appeal to many of our members, but to be truly effective it may require some changes to the way AMSI works, broadening some of the offerings to better match our membership. This should benefit all the mathematical sciences – my view is that statisticians have, more than anyone else, developed a culture of applying mathematics to a whole range of problems from relatively simple to very complex. The Australian Mathematical Society would be improved if they had a broader membership like we do.

There is a diversity of opinion in the Society about the connection between statistics and mathematics, ranging from "statistics is just a part of mathematics" through to "statistics should be totally separate from mathematics". Some of this diversity is due to historical circumstances, and some due to poor communication. However my feeling is that regardless of the semantics, we need to work together. All the mathematical sciences need a higher profile, and internal squabbles will not help in achieving that.

Working with bodies such as AMSI and ACHMS is an ongoing process that must be led by our membership as a whole. I would like to hear members' views on this.

John Henstridge
President
Statistical Society of Australia

John Henstridge

STATISTICAL CHALLENGES in 21st CENTURY COSMOLOGY

IAU SYMPOSIUM 306 Lisbon Portugal 25-29 May 2014

Second Announcement

http://sccc21.sim.ul.pt/

IAU Symposium 306 on Statistical Challenges in 21st Century Cosmology will take place in Lisbon, Portugal from 26-29 May 2014, with a tutorial day on 25 May.

Keynote speakers
- **Cosmic Microwave Background** Graca Rocha (USA / Portugal)
- **Weak Gravitational Lensing** Masahiro Takada (Japan)
- **Combining probes** Anais Rassat (Switzerland)
- **Statistics of fields** Sabino Matarrese (Italy)
- **Large-scale structure** Licia Verde (Spain)
- **Bayesian methods** David van Dyk (UK)
- **21cm cosmology** Mario Santos (South Africa / Portugal)
- **Massive parameter estimation** Ben Wandelt (France)
- **Overwhelmingly large datasets** Alex Szalay (USA)
- **Errors and nonparametric estimation** Aurore Delaigle (Australia)
- **Sparsity** Jalal Fadili (France)

Invited speakers:
- **Supernovae Cosmology** Mario Hamuy (Chile)
- **Anomalies** Hiranya Peiris (UK)
- **Sparsity** Jerome Bobin (France)
- **Anisotropies** Tarun Souradeep (India)
- **Statistical aspects of photo-z estimation** Narciso Benítez (Spain)
- **Closing remarks from a statistician** Joseph Hilbe (USA)

Tutorial sessions:
- **Sparsity** Jerome Bobin, Florence Sureau (France)
- **Bayesian Cosmology** ICIC (UK)
- **R for Observational Cosmology** Eric Feigelson (USA)

You are invited to submit an abstract for a contributed talk or poster for the meeting, via the meeting website. Full information on the scientific rationale, programme, proceedings, critical dates, and local arrangements will be on the symposium web site at http://sccc21.sim.ul.pt/

Deadlines
21 March 2014	Abstract submission
4 April 2014	Notification of abstract acceptance
11 April 2014	Close of registration
30 June 2014	Manuscript submission

SUMMER SCHOOL ON MODERN METHODS IN BIOSTATISTICS AND EPIDEMIOLOGY

8-21 JUNE 2014

Cison di Valmarino-Treviso, Italy
Castello Brandolini Colomban

The School is held at the Brandolini Colomban Castle in Cison di Valmarino, 40 km north of Treviso, in Veneto, in the northeast of Italy.

The castle is a hotel with meeting, sporting, recreational and well-being facilities. For more information, visit the homepage www.castelbrando.it

BIOSTATEPI.ORG

PROGRAM

Students must choose one course from each block (unless they choose either block 3, 6, or 7), for a total of two courses per week, and also choose between attending one week or two. No afternoon sessions will be given on Saturdays. The maximum number of students per class is 30. Stata is the statistical software used. The Sunday Stata courses are extra courses and they are independent of courses from other blocks.

8 JUNE		
Stata COURSES 1 (9:00-17:00)		
Stata Basics	Tables for Epidemiologists	Analysis of Prospective Studies

9-14 JUNE		
BLOCK 1 8:30-10:30 Lecture , 14:00-15:30 Lab		BLOCK 3 8:30-17:30
Biostatistics I	Applied Linear Regression	Missing Data
BLOCK 2 11:00-13:00 Lecture , 16:00-17:30 Lab		Causal Inference in Epidemiology
Epidemiology I	Applied Logistic Regression	Survival Analysis

15 JUNE		
Stata COURSES 2 (9:00-17:00)		
Stata Basics	Introduction for Survival Analysis	Meta-Analysis

16-21 JUNE			
BLOCK 4 8:30-10:30 Lecture, 14:00-15:30 Lab		BLOCK 6 8:30-17:30	BLOCK 7 8:30-17:30
Epidemiology II	Flexible Modeling	Monitoring and Evaluation of Public Health Programs	Statistical Methods for Populations-Based Cancer Survival Analysis
BLOCK 5 11:00-13:00 Lecture, 16:00-17:30 Lab			
Biostatistics II	Applied Longitudinal Analysis		

The School offers introductory and advanced courses in medical statistics and epidemiology, and their application in etiology research and public health.

For more information visit http://www.biostatepi.org/

SEEKING MATHEMATICIANS -
YOUR INVITATION TO HELP THE NEXT
GENERATION

What a difference a Mathematicians in Schools partnership can make…

Scientists and Mathematicians in Schools is a national program creating and supporting unique, flexible and ongoing partnerships. These partnerships between teachwers and mathematicians across Australia are having an impact on the next generation. We have many primary and secondary school teachers in Victoria who would like to welcome a mathematician into their classrooms.

A little about the program

How it works: Individual mathematicians are partnered with individual teachers in ongoing, professional partnerships.

Activities: Each partnership is flexible, unique and voluntary - the mathematician and teacher decide how they will work together taking account of workloads, the mathematician's expertise, and the requirements of the teacher and class. This allows partners to develop their own style and may include hands-on activities, presentations, demonstrations, mentoring, emailing and video conferencing.

Time commitment: No fixed or minimum hours – it's up to the mathematician and teacher to decide how to collaborate. Mathematicians may visit the school once or twice a year, a couple of times a term, or once a week or month. Other partnerships utilise ICT (email and video conferencing) almost exclusively and have little face to face interaction.

Skills/experience required: Generally a Bachelor's degree in a mathematics related field and currently working in a profession where maths is a major component of your work (including PhD candidates) is required. It includes research mathematicians, engineers, cryptographers, IT professionals, accountants, surveyors, biometricians and statisticians, amongst others.

Available teachers: A map of teachers interested in establishing Mathematicians in Schools partnerships is available on our website at www.scientistsinschools.edu.au/scientists/unmatched.htm<http://www.scientistsinschools.edu.au/scientists/unmatched.htm>.

You can nominate one of these teachers to be partnered wwith, but are also welcome to nominate a region/school/teacher of your choosing and we will aim to facilitate a partnership for you.

We have teachers waiting for you now!

For more information and to register now, visit www.mathematiciansinschools.edu.au<http://www.mathematiciansinschools.edu.au>.

If you have any questions, contact
Gill Lunniss, Scientists and Mathematicians in Schools Project Officer
in Victoria, on sis.vic@csiro.au<mailto:sis.vic@csiro.au or 03 9252 6502.

SSAI GOLDEN JUBILEE TRAVEL GRANT

to provide overseas travel funds to SSAI student members, who can prove consecutive SSAI membership for a minimum of two years.

Last year the SSAI introduced a travel grant that offers limited travel funds to assist *student members* of the SSAI to attend overseas conferences at which they present a paper or poster.

A maximum of $1000 is available per application, limited to a single trip during the course of the student's studies. Students will not be supported in their first year of study and will have had to be members of the Society for at least 2 years prior to the application deadline. Applications are required to be lodged in advance of travelling. In exceptional circumstances an application can be for post-conference support, but the application will then have to be made within 1 month of returning and the 2 year mandatory membership period prior to departure must still be met. Exceptional circumstances are limited to unforeseeable student out of pocket expenses arising from other funding sources not fulfilling their obligation or changes to the trip that could not have been avoided.

A complete application will consist of

- Information on the conference and its importance to student's work (2-3 lines)
- Details of the paper/s/poster student wants to present at the conference
- A list of other funds sought or promised, including student's home institution
- Student's out of pocket expenses expected
- Any other supporting material student feels is necessary
- A letter of support SIGNED by one of student's supervisors AND student's Departmental Head
- Student's CV

The application deadline is 31 March 2014.

If successful the student member is required to produce original receipts for amounts of equal or greater value than the grant. These receipts will be returned to the student marked with how much has been reimbursed. The student will therefore still be able to use the receipts for proof of attendance or to claim any funding shortfall from other organisations. The student member will also need to supply a report of his or her involvement in the conference to be published in the SSAI newsletter. This report should confirm the actual travel details and papers presented.

Recipients of the grant are asked to acknowledge the SSAI's support in the presentations and in any published version of the paper.

One travel grant is available per year. Assuming that more than one application will be received per year, either the Executive Committee or a special committee would help with the selection process.

For more information or to apply, please contact the SSAI Office eo@statsoc.org.

With this travel grant program the SSAI seeks to underline its objective to further the study, application and good practice of statistical theory and methods in all branches of learning and enterprise. It has been implemented to confirm to members that the SSAI is willing to support student statisticians and their budding careers.

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- Provide competitive quotations for any other classes of insurance you may have.

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- Advise on the completion of the claim form
- Provide advice to ensure you have received your full entitlements.

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FROM THE SSAI OFFICE

After some quiet weeks just after the Christmas break the pace at the SSAI office is picking up again. We have just changed to a new teleconference provider, Redback Teleconferencing, and most of our committees have already had the opportunity to try it out. Working with Redback not only improved the quality of our teleconferences, but the audio quality of our webinars should also be much better than what some members experienced last year. I'll just need to schedule a training session with Redback and then we will get started on the webinar series with HorizonOne (http://www.horizonone.com.au/) recruitment, helping those members applying for (and getting!) that perfect job.

Thanks to the suggestion of a member from WA we will also kick-start a webinar series for members doing consulting work, tackling some of the legal questions that may arise from this. With the help of the law firm Mills Oakley from Melbourne, you will soon be able to learn more about the legal issues surrounding consulting work. If there is anything specific you'd like discussed, please send me an email and I will take it up with my contact at Mills Oakley Lawyers (http://www.millsoakley.com.au/).

Still on the subject of webinars, we are looking for someone to take on the job of webinar coordinator. While I am happy to continue to do the admin side of organising the webinars, we really need someone with good connections to be able to recruit interesting webinar speakers for SSAI. If you think you would like to take this on, or if you would just like to chat about how much work would be involved, please contact me.

Our new website is truly up and running but you will notice that the link to the ANZJS is still missing. Our website developers have encountered some difficulties that they are currently trying to resolve. Also, the directory for accredited statisticians isn't visible to the public yet. To get this off the ground, accredited members will need to log in to the "My Community" area of the website and enter their areas of expertise. Once the information has been compiled, the developers will be able to make the directory available to non-members.

The "My Community" area is not just of interest to accredited members. This is where you go to connect with your branch or section or other members in general. While the affiliation to your branch was automatically entered when we changed from the old to the new website, your affiliation to a section was not brought across. When you click on "My Community" you'll be able to add information to your profile and choose the section groups that you are interested in and want to stay in touch with. You may even decide to upload a photograph of yourself! Ideally the "My Community" area will one day be a discussion hub for our members where they will post comments, ideas, requests and any other matters of interest to the statistical community. If you have any trouble negotiating through this area, please drop me an email or give me a call.

Would you please note that we do not use the former usernames any more. Your username for the website is now your primary email address registered with SSAI and when you are logging in for the first time you will be required to set up a new password. Your old usernames can be discarded. We don't actually work with membership numbers, but the system still generates them. If you need your membership number to register to ASC2014, please contact me.

Marie-Louise Rankin

During the month of March the branches will elect or re-elect council members. Thank you to all the council members of the past year. It was a pleasure working with you. Welcome to the new council members. Please do not hesitate to contact me if you have any admin questions that I might be able to help you with.

That goes for all our members, of course. I am just a phone call or email away and I always love hearing from you.

Marie-Louise Rankin

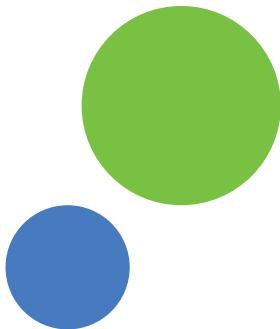## LOOKING FOR A JOB?

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 eo@statsoc.org.au. Listing is free!

MEMBER NEWS

Bronwyn Harch (current Chief of CSIRO's division of Computational Informatics) has been selected amongst key business people, leading academics, prominent commercial innovators and high-ranking public sector figures as a Fellow of the Australian Academy of Technological Sciences and Engineering (ATSE). ATSE is an independent body of 800 eminent Australian engineers and scientists that aims to enhance Australia's prosperity through technological innovation. The new Fellows, elected by the Academy's Fellowship, hail from a variety of fields and include some of the most prominent Australian women in research and technology.

Honorary doctorate for Peter Hall

The culmination of a series of events celebrating the International Year of Statistics by the University of Cantabria, Spain, was to award an honorary doctorate to Professor Peter Hall, University of Melbourne. The citation for the degree stated "Professor Hall is well known within the field of statistics and a presentation is not needed at all. It is enough to say that many of his more than 600 publications are among the most cited in the field. In addition, Professor Hall appeared among the 10 most cited scientists in the area of Mathematics in all reports by in-cites (http://in-cites.com/scientists/) until they stopped running in 2008. Professor Hall had already received this award from the universities of Lovain (1997), Glasgow (2005) and Sydney (2009)."

Other events organised by the University of Cantabria in 2013 to commemorate the International Year of Statistics included a lecture series held during the fall, a forthcoming book dedicated to the dissemination of statistics and its applications, and the elaboration of a series of videoclips for the Spanish Statistical and Operational Research Society, SEIO.

It is with great regret that SSAI wishes to advise of the passing of longtime member Richard Morton (Canberra). Richard passed on 1 December 2013.

Richard had been a CSIRO Post Retirement Fellow since 2008 and worked in CSIRO as a Biometrician for 35 years. Richard collaborated with fellow statisticians within CSIRO, as well as others both nationally and internationally. He was also a valued collaborator of many other CSIRO scientists – particularly in the life and environmental sciences. Richard was a member of the Society since January 1979.

Our thoughts and deep sympathies lie with the family and friends of Richard, as well as his collaborating colleagues.

CANBERRA BRANCH NEWS

Correcting for missing data in the Dutch register-based Census of 2011

Eric Schulte Nordholt presented the annual Foreman lecture at the September meeting of the Canberra Branch. Eric is a senior researcher and project leader of the Dutch Census at Statistics Netherlands and has also been seconded to Eurostat in Luxembourg and Statistics New Zealand.

Before his talk, Eric briefly described the structure of the Central Statistical Office (CBS), which is responsible for almost all official statistics in the Netherlands as well as European (community) statistics. Statistics Netherlands does not have any regional offices and is staffed by approximately 2000 employees.

Statistics Netherlands held its last traditional, questionnaire based, census in 1971. They now conduct the census every 10 years using available registers and surveys. This includes the Labour Force survey and registers such as:

Population register, which excludes illegals and counts homeless at the last known address;
• Jobs and a self-employed file;
• Fiscal administration;
• Social security administrations;
• Pensions and life insurance benefits; and
• Housing registers.

The various data sources are combined using the unique citizen number, on the registers, and a combination of fields such as sex, date of birth and address. The linkage strategy, conducted at both the household and person level, optimises the number of matches whilst minimising the number of incorrect and missed matches.

Missing data is corrected for using a combination of three methods:
• Imputation, when sufficient auxiliary information is available;
• Repeated Weighting, a special weighting method to calibrate sample results consistently to population totals in a set of tables; and
• Micro macro method, an iterative proportional fitting method applied to produce detailed estimates for table cells that cannot be estimated otherwise.

The register based system has the obvious advantages of a relatively inexpensive unit cost and fast production time. The disadvantages are that statistics are not the register holders' priority. This can affect the timeliness, quality and type of data collected. Also, the publication of small subpopulation estimates can be difficult or impossible because of limited information. The ten year lag between each census makes it difficult to keep current with knowledge and software.

Following Eric's presentation, two discussants, Greg Griffiths and Philip Bell, both from the Australian Bureau of Statistics, gave short talks and raised some interesting points.

Greg discussed methodological issues arising from the CBS approach to generating estimates in the virtual census, in particular about measuring the quality of census statistics within hypercubes. He also noted that the discussion papers accessible through the CBS website are a valuable resource for survey methodologists. Philip discussed the challenges facing the Australian Census in 2016. He mentioned the expected increase in e-form take-up, various approaches to target respondent follow-up and, in particular, imputation issues.

There is significant interest in the register based census approach. Interested readers should contact Eric at e.schultenordholt@cbs.nl.

Gwenda Thompson

NSW BRANCH NEWS

J.B. Douglas Awards 2013

The 14th Annual J.B. Douglas Awards was held on the 19th of November 2013 at the University of Technology, Sydney. These awards seek to provide a platform for promising postgraduate university students to present their work within the broader NSW statistical community. University departments are encouraged to nominate their most promising student to compete for the Award (and cash prizes!).

We had six university departments postgraduate students present their research in this year. From left to right in the photo are:

- Chong You (School of Mathematics and Statistics, University of Sydney)
- Sarah Neville (School of Mathematics and Applied Statistics, University of Wollongong)
- Zhipeng Hao (Department of Statistics, Macquarie University)
- Frances Garden (Sydney School of Public Health, University of Sydney)
- Salman A. Cheema (School of Mathematical and Physical Sciences, University of Newcastle)
- Francis Hui (School of Mathematics and Statistics, University of NSW).

Scott Sisson and Francis Hui

Associate Professor Scott Sisson, SSAI NSW Branch President opened the event with a welcome and introduction. He also reminded us that this Award is to remember the work of Jim Douglas and his significant contribution to the postgraduate study of statisics. It was great to see many friends of the presenters and of SSAI NSW Branch in the audience to support the event. We also had friends and colleagues from University of Wollongong and University of Newcastle in attendence. Their efforts to come was much appreciated.

We thanked various School and Department Heads for their enthusiastic support and the nomination of their students. We also recognised and thanked the sponsors for their generosity to support this event. Their logos can be seen on the background of the photo.

Our judges for the evening were Scott Sisson and Distinguished Professor Noel Cressie. The length of taken to determine a winner (some thought Scott headed back to Nottingham) was a testament to the high quality of the presentations. However, we didn't mind the wait and had a good chat enjoyed some light snacks. Finally, Scott annouced the winner was Francis Hui from the University of NSW. He presented the cheque of one thousand dollars to Francis.

Following the Awards was the Annual Lecture, delivered by Distinguished Professor Noel Cressie from National Institute for Applied Statistics Research Australia (NIASRA), University of Wollongong. His talk was titled "The Statistical Analysis of Satellite Retrievals". Noel shared many intriguing experiences working with statistics, including his collaborations with NASA. He also introduced spatio-temporal methods to analyze Aerosol Optical Depth (AOD) data obtained from the MISR instrument onboard the Terra satellite.

The Annual Dinner following the talk was held at Aerial UTS Function Centre, a short walk from the lecture theatre. More than 40 people attended the dinner. The dinner photo showed that we enjoyed the good food and company. We were glad to see more students attending the dinner than ever before. We would like to thank Dr Davy Wong for booking the venue and arranging the catering. Overall, we recieved excellent feedback from participants. We hope to see an even greater turn out this year!

Those wishing to reflect further on the contribution of J.B. Douglas should visit the following: http://web.maths.unsw.edu.au/~jim/jdouglasshortcit.txt

Dr Arthur Hung
Event Co-ordinator & SSAI NSW Branch Councillor

SSAI NSW Branch would like to thank the many contributions to Branch made throughout 2013. This includes my fellow NSW Branch Councillors, visiting presenters, event attendees and their guests. Also to our sponsors for their ongoing support and well wishes. This year would not have been possible without you all.

Mr Ryan Defina
SSAI NSW Branch Secretary

SA BRANCH NEWS

South Australian SSAI September 2013 Short Course

Advanced Analysis of Linked Health Data

The Flinders University Centre for Epidemiology and Biostatistics (FCEB) hosted a five-day Advanced Analysis of Linked Health Data short course designed by the UWA School of Population Health. The course was presented by Professor David Preen, Director of the Centre for Health Services Research at the UWA School of Population Health.

Wildlife spotting at lunchtime

The course provided health and social researchers with the opportunity to build on their pre-existing practical data management skills required for the analysis of linked data as well as exploring a number of advanced topics in epidemiology relating to study design and causal inference.

Paul Sutcliffe

South Australian SSAI November 2013 Meeting

The Impact of Schools on Young People's Transition to University

The speaker at the November meeting of the SA Branch was Patrick Lim, a Senior Research Officer in the Research and Consultancy Branch of the National Centre for Vocational Education Research (NCVER). The topic of Patrick's talk was the findings of the published report "The impact of schools on young people's transition to university".

The report discusses research into three questions: (1) which school attributes have a positive impact on tertiary entrance rank (TER) and the probability of university enrolment by age 19?; (2) which of these school attributes matter most?; and (3) what is the impact of good-quality schools on the likelihood of school completion of low-SES students? The analysis builds on considerable previous research into the role of the school on student outcomes.

Patrick described the data collected by the Longitudinal Surveys of Australian Youth (LSAY), the primary data source for the report. The survey focuses on the topics of education and training, work and social development, tracking the progress of Australians between the ages of 15 and around 25 by contacting participants every year for up to 12 years. Since 2003 the cohorts for LSAY have been selected from students who participate in the Program of International Student Assessment (PISA). PISA aims to evaluate and compare education

systems in different countries by testing the skills and knowledge of 15-year old students.

Multi-level modelling was applied to the LSAY data to measure the impact of school attributes after considering the characteristics of individual students. For the first wave of LSAY collection (the 'PISA wave') a school administrator completed a questionnaire about their school, which provided many of the school-level variables. Some school-level variables, such as a Socio-Economic Status, are derived from aggregating or averaging the characteristics of the school's students.

The multi-level modelling suggested 20% of the variation in student TER is attributable to the effect of the school, with just over half of this school-level variability explained by identified school-level attributes. Significant school attributes for TER included sector (Catholic and independent higher), gender mix (all-male higher than co-educational schools), the extent of the school's 'academic orientation' and the degree to which the school is competing for students with other schools in the same area (TER higher when no competition). After accounting for a student's TER, school-level attributes explain 9% of the variation of a student's probability of being enrolled at university by age 19. Significant factors for this outcome variable included school sector, school SES and school competition.

School quality was found to have a significant impact on the probability of low-SES students completing Year 12. For example, among students in the bottom 10th percentile of individual achievement, those from a low-SES background attending low academic quality schools had a probability of less than 0.4 for completing Year 12. Their high-SES peers attending the same schools had a Year 12 completion probability of around 0.6. The study also found that as academic school quality increases, individual SES becomes irrelevant with respect to the probability of completing Year 12. This showed that academic school quality is more important for the most vulnerable students.

In his concluding remarks Patrick noted there was consistency between the findings in his report and those in the Gonski review. He also stressed that high TER and attendance at university are not essential to successful life outcomes, noting the important role of VET in schools and tertiary VET pathways in our education system.

Julian Whiting

South Australian SSAI February 2014 Meeting

Quadratic Forms in Statistics: Evaluating Contributions of Individual Variables

The guest speaker at the February meeting of the SA Branch of the Statistical Society was Associate Professor Inge Koch from the University of Adelaide. Inge's talk was based on joint research with Paul Garthwaite from The Open University (UK).

Quadratic forms capture multivariate information in a single number, making them useful, for example, in hypothesis testing. Quadratic forms that are commonly used in statistics include the Mahalanobis distance and Fisher's discriminant function. If the number of variables of the multivariate vector or data is large, or if the statistic obtained from the quadratic form is large, it will be informative to partition the quadratic form into contributions of individual variables. Meaningful partitions depend on the criteria used to select it and are based on a transformation that maximizes the sum of correlations between

Inge Koch

individual variables and the variables to which they transform under a constraint. It turns out that the partition is optimal under two criteria.

Inge highlighted two datasets used to test methods. The first was Swiss bank notes where 6 measurements on the size and position of elements on the notes were provided for 100 genuine and 100 fake notes. The other was a dataset providing 9 measurements, both physical and biological, on 100 male and female athletes from the Australian Institute of Sport.

To set the scene Inge demonstrated the form of the test statistic for the Mahalanobis Distance for the Swiss bank notes. The Mahalanobis Distance between the vectors of average genuine/fake notes is 3.68. The aim is to find a partition W such that W is simpler than X and pairs (Wj,Xj) are closely related. One natural choice for partitions was principal components analysis which results in uncorrelated W's, but since the W's are linear combinations of all X's the relationship criterion does not hold. After playing with the data Inge identified a solution for the population and discussed a theorem which gives precise criteria for the optimal partition and the maximum achievable correlation Corr (Wj,Xj) between the original and transformed vectors. Inge gave explicit expressions for the optimal partition and the resulting correlation, both for the population and the sample.

Inge showed how these transformations work in practice in a partitioning of Hotelling's one- and two-sample multivariate T-square statistics. In a hypothesis testing $\mu = \mu_0$ for the Swiss bank notes the T12 was large (8.71) so the null hypothesis was rejected. The partitioning identified that three variables (distance from the inner frame to the lower border, the distance from the inner frame to the upper border and the diagonal length) were found to be the variables contributing most to the results of the multivariate test. A similar result was obtained using the Mahalanobis Distance. The Fisher's Linear Discriminant Function which assigns random vectors to one of two classes also gave similar results and identified that one genuine note was misclassified.

The athletes data showed that the correlations between the X's and W's identified that two pairs of variables exhibited strong collinearities (haemoglobin & haematocrit, percent body fat & sum of skin folds) which decrease the correlation of the variables exhibiting collinearity. Inge's solution was to remove the collinearity by forming new variables through rotation by adding them together and taking differences using block-diagonal matrices. A neat property is that the new variables are invariant under rotation. The Hotelling's two-sample T-square statistic for the hypothesis test of $\mu_1 - \mu_2$ was extremely large (1191.1), and after removing collinearities, the transformed variables led to a simple interpretation of the contribution of individual variables.

Inge's results led to an interesting discussion on practical treatment when collinearity is present. Collinearities between variables will reduce the strength of some associations. Some members of the audience felt that intuitively the variables would be highly correlated because they in essence measure the same thing so from a practical point of view would remove one of them. For example the two blood variables measure the oxygen capacity of athletes and so it would not be surprising if they were highly correlated. On the other hand Inge's rotation technique enabled the variables to remain in and improve the partitioning process.

Frequently, a quadratic form is central to a multivariate statistical analysis so the researcher might reasonably expect the quadratic form to yield more than just a p-value from a hypothesis test. This talk provides a means of learning more about a quadratic form and hence should prove useful.

Paul Sutcliffe

QLD BRANCH NEWS

CSIRO and SSAI joint event

The final meeting of the Queensland Branch for 2013 was jointly sponsored by CSIRO and SSAI. Dr David Clifford from CSIRO introduced four speakers from a variety of backgrounds. Dr Miranda Mortlock from the University of Queensland's School of Agricultural and Food Sciences gave an account of the history of statistics from the perspective of agriculture, describing the association between early developments in statistics and the design of experiments in plant and animal research. As a teacher of first-year agriculture students, she talked about the mostly positive influence of computers in statistics education and practice. Miranda reflected on the current challenges in teaching statistics, including the continued reliance on hand calculators, use of click-and-point software, and, with so much choice, which topics to teach. She concluded her presentation with a video which she uses to bring agriculture into the classroom.

The second speaker was Sally Pritchard from the Australian Bureau of Statistics (ABS) who is currently Director of State and Territorial Statistical Services for Queensland. Sally talked about the importance to open government and democracy of trusted statistical information to inform public debate and promote effective decision making, quoting from a speech by Dennis Trewin who was the Australian Statistician at the time (March 2005): "A strong official statistics agency is one of the most important elements of an effective democracy." She described the data quality framework in place at the ABS for the collection, storage and use of information from the census, sample surveys and administrative datasets. Sally described some of the ABS data collections and the use of phone apps for disseminating information, including one for key economic indicators. In response to a question from the Chair regarding the costs and benefits of a census versus a survey, Sally reported that the 2016 census would be electronic in the hope that this would be cheaper but it would come with a different set of risks to data quality.

Ross Darnell, Michelle Haynes, Sally Pritchard and Miranda Mortlock

Dr Ross Darnell from CSIRO Computational Informatics was the third speaker. Ross is currently the Australian coordinator of the AusAID project titled "Capacity and Action for Aflatoxin Reduction in Eastern Africa (CAAREA)". He used CAAREA as the setting to talk about the fundamental role of statistics in scientific research and to emphasise the importance of the statistician in a multidisciplinary team. Aflatoxin, a mycotoxin produced by particular species of fungi, affects maize crops in East Africa. Research objectives of the CAAREA project include farm surveys to develop risk models, experiments to assess genetic and environmental influences, genotype trials, and development of a diagnostic kit to test for the presence of aflatoxin in food. Ross described some of the challenges associated with each objective, including resistance to randomised controlled trials in a development context.

The final speaker was A/Prof Michelle Haynes who is Program Leader of the Research Methods and Social Statistics Division of the University of Queensland's Institute for Social Science Research. Michelle's presentation focussed on applications and issues in the analysis of data from longitudinal surveys for social research. She began by distinguishing cross-sectional from longitudinal data and pointed out there is an increasing awareness that many questions of social policy interest can only be answered with longitudinal data. Most population-based longitudinal surveys in Australia are funded by government and only commenced from the late 1990s. Michelle used one of these, HILDA (Household, Income and Labour Dynamics in Australia), to illustrate the importance of longitudinal data to a life-course approach to understanding "disadvantage" and modelling hours of work with a two-part regression model to address zero-inflated continuous data. Michelle concluded with a brief outline of the scope for statistical methodology research relevant to the collection and analysis of longitudinal data.

Elaine Pascoe

VIC BRANCH NEWS

Meta-analysis of incidence rates in the presence of sparse data and zero cells

In November the Victorian Branch of SSAI heard a presentation from Dr Matthew J. Spittal titled "Meta-analysis of incidence rates in the presence of sparse data and zero cells". Matt is a Senior Research Fellow within the Melbourne School of Population and Global Health where he collaborates nationally and internationally on a diverse range of projects including the epidemiology of suicide and the predictors of medico-legal events against medical practitioners.

His research into statistical methodology focusses on methods for predicting events when the underlying risk is changing over time, which underpin the analysis of data in much of his applied work. Matt spoke on the challenge of analysing data when summary results from studies of counts of events over time contain zeros. In this situation the study-specific incidence rate ratio and its standard error cannot be calculated because the log of zero is undefined. This poses problems for standard, inverse-variance, methods of pooling data for meta-analysis.

Several illustrations were presented from Matt's work in suicide prevention studies, where erecting barriers at bridges and other physical structures had resulted in a complete cessation of attempted and/or completed suicide.

Matt took the audience through results of a series of simulation studies comparing and contrasting several alternative methods of pooling incidence rate data based on the Poisson distribution, from simple "fixes" like adding 1/2 to the count in the numerator for zero rates (apparently recommended by some recent handbooks on meta-analysis) to fully-specified generalised linear mixed models implemented in Stata and WinBUGS. The standard methods performed poorly in the face of heterogeneity in rates and the intervention effects, demonstrating that statistical models are required for accurate estimation of target parameters.

These findings have implications for synthesis studies in public health and other disciplines that seek to evaluate the impact of interventions on rare events, for example, transmission of HIV among those using condoms during sexual activity. A healthy discussion between Matt and the audience followed his presentation, and members and guests then retired to a local restaurant for dinner.

Lyle Gurrin