

The New Zealand Statistical Association Newsletter

Number 79

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Welcome

by IAN WESTBROOKE NZSA President

Departures, conferences and education, are some of the themes in this newsletter, along with news of statisticians in NZ.

Most significant was the loss of one of our leading statisticians. I sent this message to Alastair Scott's family on behalf of NZSA:

Our members salute Alastair Scott's memory - as a statistician with strong international standing who also contributed much to statistics in New Zealand and to the NZ Statistical Association. Alastair served as President in 1989 and 1990, and continued to make insightful contributions regularly at our conferences right up to our latest conference late last year, both formally and informally. He was unfailingly interested in helping and encouraging statisticians - younger and more mature.

On a personal note, Alastair gave some of the first statistics lectures I attended in my first year at Auckland University, and his first year teaching there, to many hundreds in a cavernous theatre in the then brand-new "Brutalist" building where his department is still situated today.

Our association expresses its condolences to Alastair's family, colleagues and friends. His legacy lives on through his contributions to statistics internationally and in NZ, and with his personal contact, teaching, collaboration and encouragement to many of our members and beyond.

There are a number of retirements noted

throughout the newsletter, with the retirement of Ross Ihaka featuring at our conference later this year. It is great to see that many of those who have formally retired are continuing to contribute - following in our own ways the great example set by Alastair.

I'd like in particular to express the Association's thanks to recent retiree Howard Edwards, for his contribution to the Association, especially his role as treasurer over the past few years, and his extra efforts in the transitions from our previous treasurer and to our new treasurer, Daniel Gerhard.

Good reading

Ian



Editorial

Kia ora koutou,

I hope the year is going well for you.

As always this newsletter includes updates on the comings and goings of our New Zealand statistics community.

Those of you whose lives intersected in some way with Professor Alastair Scott, will, I hope, take time to read the tribute to "one of the finest statisticians New Zealand has produced". Little did I realise sitting in his lectures as a 20 year old that I would be collating this newsletter and recognising his life-long contributions to our discipline. Thank you Ilze, Chris, Chris and Atokohu for penning such a fitting tribute.

Thanks also to Richard Arnold for contributing his article *Reviewing Introductory Bayesian MOOCs*. I would welcome similar contributions to future newsletters.

I am also pleased to be able to include for the first time since I have been the editor, contributions from ... Well I will leave that for you to work out, there are three of them! Thanks to these new or returned contributors and of course thanks to all the regular contributors, without their contribution this newsletter pretty much would not exist!

The next newsletter will be published in early 2018 and will include reflections on the December NZSA conference. (If you would like to volunteer to write those I'd love to hear from you!) If you have anything that you would like to contribute to that newsletter please let me know and plan to have your contribution to me by mid December (2017).

Ngā mihi,

Marie



Conferences

2017 IARSC-ARS/NZSA Conference



Call for Papers and Conference Announcement

We are pleased to announce the 68th Conference of the New Zealand Statistical Association. The conference will be held in conjunction with the Asian Regional Section of the International Association of Statistical Computing of the ISI. The conference will take place in the world-class Owen G. Glenn Business School at the University of Auckland from the 10–14th December 2017. Registration details, as well as information about accommodation, can be found at www.nzsa2017.com. Registration is open now.

The aim of the conference is to provide a forum for the discussion and exchange of ideas, new concepts and recent methods in statistics. Being a joint conference, there will be a blend of traditional statistical theory and practice along with new developments in statistical computing, especially as related to the R statistical system. The conference marks the retirement of Ross Ihaka, one of the co-founders of R.

Four half-day workshops will be held on Sunday 10 December, the day preceeding the main conference: "Faster R code" by Thomas Lumley, "Getting to Know Grid Graphics" by Paul Murrell, "Analysing spatial point patterns using spatstat" by Rolf Turner, and "Graphics in R" by Chris Wild.

Call for Papers

Participants wishing to present a paper at the conference should submit an abstract in English (plain text or LaTeX) not longer than 500 words, including title, name of author or authors, keywords and contact information. The submission should be uploaded on the conference website www.nzsa2017.com/abstracts/ The deadline is 31 August 2017.



Biometrics by the Border

Kingscliff NSW 26-30 November 2017 held at Mantra at Salt Beach, Kingscliff in far northern NSW http://www.biometricsociety.org.au/

Sixth Wellington Workshop in Probability and Mathematical Statistics

4-6 December 2017, Victoria University of Wellington http://sms.victoria.ac.nz/Events/Dec2017WWPMS

SEEM 2017: Statistical Ecology and Environmental Monitoring conference 2017

Queenstown, New Zealand Dec 6-8 2017 The website is www.stats.otago.ac.nz/conferences/seem2017

Stories of interest

Alastair John Scott, Emeritus Professor of Statistics (November 17, 1939 – May 25, 2017)

by Ilze Ziedins, Chris Wild, Chris Triggs, Atakohu Middleton, Department of Statistics, University of Auckland

Alastair Scott, one of the finest statisticians New Zealand has produced, died in late May, aged 77, on the North Shore of Auckland. He is survived by his wife, Margaret, children Andrew and Julie, six grandchildren, and his sister Marilyn. There was standing room only at the University of Auckland's Maclaurin Chapel when he was farewelled on Wednesday May 31.



Alastair served the University of Auckland with distinction from 1972 until 2016. After his formal retirement in 2005 he held only fractional appointments but continued working nearly full time, regardless. His research was characterised by deep insight and he made pioneering contributions across a wide range of statistical fields. He was acknowledged, in particular, as a world leader in survey sampling theory and in the development of methods to efficiently obtain and analyse data from medical studies. His methods are applied in a wide range of areas, notably in public health. Beyond research, he contributed prolifically to the statistical profession in academia, government, and society.

But Alastair wasn't just a world-leading statistician. He was also sociable, charming, mischievous, was always first with the news, loved a good gossip, but was always supportive of others. "Everybody who met Alastair became a lifelong friend," says colleague **Chris Triggs**. Adds colleague **Thomas Lumley**: "Alastair had a national and international reputation for being friendly and helpful."

Alastair grew up in Te Awamutu playing rugby and cricket, and had a lifelong love of the games. He played in the high school curtain-raiser for the 1956 Waikato vs Springbok match in Hamilton, playing as hooker. He also played representative cricket for Waikato Colts against the touring Australian national team in 1956-57.

In his last year at Te Awamutu College, Alastair was Dux, and won the school's first university scholarship via a hothouse exam involving 10 papers, two in each of five subjects, sat over a period of less than three weeks. In 1958, he started studying maths at the University of Auckland. While living at student hall O'Rorke, he fell for fellow resident **Margaret Hedley**, a science student from Te Kuiti. Margaret would later teach high-school chemistry and biology.

Also in 1958, **David Thomson**, who was also studying maths, met the pair at O'Rorke Hall. "Alastair was one of the best people you could ever

hope to meet, indeed a best friend, and I can say the same about Margaret," he says. "Alastair was patient, especially when explaining concepts to others who had not understood something. As a student, I often benefited from his knowledge and his willingness to explain meanings of things I found difficult." David and Alastair later shared a student flat, playing bridge (coached by Alastair), going skiing at Ruapehu, and running a basketball team in a YMCA competition.

Alastair gained his BSc in Mathematics in 1961 and his MSc in Mathematics in 1962. He then won a PhD scholarship in pure mathematics (algebra) to the University of Chicago. During the nine-month gap before going to the United States, Alastair married Margaret (he later told a colleague that one of the chief pleasures of marriage was that he never had to go dancing ever again) and worked for the Applied Mathematics Division of the-then Department of Science and Industrial Research (DSIR) in Wellington. It was while at the DSIR that Alastair became fascinated by statistics and decided to switch his subject at Chicago from pure mathematics to statistics.

At Chicago, Alastair's doctoral supervisor was **David Wallace**, now an Emeritus Professor there. In turn, David's supervisor had been **John Tukey**, who played a key role in the development and study of statistics in the mid-1900s. Wallace encouraged Alastair to take a holiday job at Bell Labs, the research laboratory where Tukey worked.

At Bell Labs, Alastair met **David Brillinger**, who became a collaborator and lifelong friend, and future statistical computing luminary **John Chambers** was an office mate. Alastair gained his PhD in 1965, his thesis titled *Allocation of Effort in the Design of Selection Procedures*. When David moved to the London School of Economics (LSE), Alastair wrote him a letter asking if there were any jobs in its Department of Statistics.

Indeed, there were - and Alastair ended up taking over the job vacated by fellow Auckland graduate **George Seber**! Alastair's time at the LSE, from 1965 to 1972, was formative. If the DSIR and Bell Labs had been Alastair's statistical nurseries, Chicago and LSE were the sources of his formal statistical education. At LSE, Alastair came under the influence of **James Durbin**, a British statistician and econometrician known particularly for his work on time series analysis and serial correlation in regression, and **Alan Stuart**, whose research focused on sampling theory, efficiency of tests, and measures of association. Alastair also met **Fred Smith**, now Emeritus Professor for Demography at the University of Southampton, who also became another lifelong friend and research collaborator.

The LSE years were a time of hard work but also the foundation for lifelong friendships and collaboration. Fred remembers that he, Alastair and David Brillinger "had in common recent marriages and the births of our children. We shared experiences and baby clothes and carriages as well as interests in politics and sports. There was a very good common room in LSE where the conversation flowed across many topics, switching from politics to economics, then sport and family matters, as well as statistics." LSE at the time "had the greatest collection of statistical talent in a London college" and had a "radical image" that suited Alastair's political interests, says Fred.

Alastair played tennis with Fred at the LSE sportsground, employing a "vicious sliced backhand", and while in the LSE staff cricket team, which played other London colleges, was known as a "demon leg spinner." One memorable summer, Fred and the Scott family were part of a group who drove a minibus from Southampton to Oslo, Norway, to attend a meeting of European statisticians. "I can't remember the meeting", says Fred, "but I still remember the trip."

Alastair made a conscious decision to make his career in New Zealand: he and Margaret wanted their children to grow up as New Zealanders. The Scott family returned to New Zealand in 1972, and Alastair joined what was then the Department of Mathematics and Statistics.

Distance proved no barrier. Alastair held visiting positions at Bell Labs, the Universities of North Carolina, Wisconsin, and California Berkeley in the US, and at the University of Southampton in the UK. Throughout his career he was offered a stream of job offers from prestigious universities overseas, but turned them down.

In 1994, the University of Auckland's statistics staff, led by George Seber, had a very amicable

divorce from the Department of Mathematics and Statistics. But due to George's ill-health at the time, it was Alastair who became the first head of the Department of Statistics. The pair set the tone for the department that still exists: hard-working, but welcoming, and social. Says David Thomson: "Alastair believed that lecturers needed to demonstrate humility and respect for their students, and wherever possible, to show a human face to those they were teaching." George, who retired in 2002, and Alastair were instrumental in building the Department of Statistics into the largest such department in Australasia.

Rachel Cunliffe, a MSc in Statistics graduate who is now co-director of the Department's CensusAtSchool project, was one of Alastair's students. "When he was my lecturer, he made it a joy to be in his classes. I remember sitting in my seat smiling because he found a way to talk about his twin grandchildren in almost every lecture. When there wasn't a way to do so naturally as part of our material, he'd bring up an overhead transparency showing us the latest photos." Rachel says that Alastair "taught me to work hard, but to not make life all about work. He was the best kind of human: incredibly smart and thoughtful, yet full of warmth and humour with a continual sparkle in his eye - someone who was undoubtedly enjoying life and genuinely always made time for others."

Statistics sits within the Faculty of Science. Dean of Science **John Hosking** says while Alastair contributed in many obvious ways to the faculty, "his main contribution was less visible and more personal. Alastair was an important mentor to a huge range of people, particularly younger researchers. His affable personality and ability to deal with anyone at any level with a smile and an appropriate word made him a natural for this role, and the sage advice that followed was always incredibly useful and effective."

The generosity didn't stop there, says John: "Alastair was also notably free with his wallet at the Senior Common Room, regarding a professorial salary as coming with an obligation to share his good fortune with others yet to reach that level." In 2005, the year Alastair officially retired, a conference in Auckland in his honour attracted the largest concentration of first-rank international statisticians in New Zealand in one place at one time. In his "retirement" years - as we mentioned earlier, he was still working - he remained a central figure in the Department and the common room was still his office.

From 2005 to 2008, Alastair was on New Zealand's first advisory committee on Official Statistics, the chief source of external advice for the Minister of Statistics about the health of the Official Statistics system. He also advised government statistics agencies in Australia, Canada, and the US.

Alastair was a Fellow of the Royal Society of New Zealand, the American Statistical Association, the Institute of Mathematical Statistics, and the Royal Statistical Society, and an honorary life member of the New Zealand Statistical Association (NZSA). In 2006 he received the prestigious Waksberg Award from the American Statistical Association and Statistical Society of Canada for outstanding contributions to survey methodology. That was followed in 2012 by the NZSA's premier prize, the Campbell Award, for sustained contribution to the promotion and development of statistics.

In November last year, in Christchurch, Alastair was awarded the Royal Society of New Zealand's Jones Medal, which recognised his lifetime contribution in the mathematical sciences. According to Thomas Lumley, "Statistics is mostly not about maths, so for a statistician to get a mathematics award requires significant theoretical contributions."

On the night, Alastair said he felt a great deal of pleasure in receiving an award named for New Zealand's most celebrated mathematician, **Sir Vaughan Jones**, as the latter was in the first class that he had taught at the University of Auckland after returning from London in 1972. Also in that class was the late **Keith Worsley**, whom Alastair said was his "most successful PhD student" and who later became a world leader in neurostatistics.

Alastair John Scott had a full life professionally and personally. He was a valued colleague and friend. We will miss him greatly and we extend our heartfelt condolences to Margaret, Andrew and Julie and his wider family and friends all over the world.

Review: Introductory Bayesian MOOCs

by Richard Arnold, School of Mathematics and Statistics, Victoria University of Wellington

For large classes doing standard introductory material, Massive Open Online Courses (MOOCs) provide unparalleled efficiency for both students and teachers. Each works in his or her own time. The lecturer only needs to deliver lectures once, but can also hone, polish and rework material. The student can view and re-view material as slowly or as quickly as they like. Students don't hold each other up, or feel as if they are left behind.

Whether MOOCs end up replacing a substantial proportion of conventional University teaching remains to be seen: they suffer from the same drawbacks of conventional distance learning (reduced student engagement, the lack of the motivating experience of being in a room with peers, lack of direct access to the lecturer, as well as the problem of verifying who has actually completed an assignment or quiz). However the new and developing technology associated with MOOCs (new video presentation techniques, integration of written materials with video and online content, peer discussion forums) do mean that MOOCs are a significant step forward for distance learners. For universities they provide a showcase for teaching staff, attracting new students to enrol, and also a convenient way to allow students to access introductory pre-requisite material prior to enrolment in a regular taught programme.

So what MOOCs are available for students of Bayesian statistics? Here I review two introductory Bayesian statistics courses which are available on the Coursera platform (www.coursera.com). They are 'Bayesian Statistics: From Concept to Data Analysis', taught by Herbie Lee from University of California at Santa Cruz, and the 'Bayesian Statistics' module of the 'Master Statistics with R' programme taught by Mine Çetinkaya-Rundel, David Banks, Colin Rundel and Merlise Clyde of Duke University.

The Coursera platform has some very nice features for its students. Courses are bundled into week-long blocks, with short videos (3-10 minutes typically), full video transcripts, supporting documents, and quizzes (mostly multi-choice answers, though some allowing numerical or text answers to questions). Videos can be played at variable speed (happily without altering the instructor's voice pitch), and instructors can arrange for the video to pause and ask the student a question at key points.

Students pay around US\$50 per month for access to a course – which entitles them to submit quizzes for credit, and participate in peer discussion forums. For the Santa Cruz course, this covers the full 4 week course. The Duke Bayesian course could also be completed in 4 weeks, though it is one of 5 courses in a 'Specialization' in introductory statistics with R - which at the recommended pacing would take 5-6 months to complete. Students can of course go faster if they wish. At the end of the course students receive a certificate. It is also possible to gain access to the course content without payment, but this removes access to assessments, feedback and peer discussion forums – and there is no recognition of learning available at the end.

The two courses contain broadly similar content – Bayes Theorem in the familiar and simple discrete and continuous settings seen in any Bayesian course (Beta-Binomial, Gamma-Poisson, Normal-Normal). Both spend time talking about conjugacy, Bayesian hypothesis testing, and the Bayesian approach to linear regression. Both spend time comparing the frequentist and Bayesian approaches, with the Duke course going further and spending time on Lindley's Paradox.

Courses on Bayesian statistics have two very particular demands which distinguish them from other courses, even from frequentist courses: namely requirements for mathematics and computational methods. The former presents complications for statistics programs of all kinds worldwide: we have an increasing demand for statistical training for students who have a low level of mathematical knowledge. The latter is more easily addressed by teaching students the computational methods they need as and when they need them.

The two courses differ in their pre-requisite levels of mathematics. The Duke course assumes only very basic mathematics, whereas the Santa Cruz course explicitly states that first year University calculus is required - although more at the level of familiarity than mastery. Both courses nevertheless spend time developing expressions for posteriors, involving the necessary concepts of finite and infinite sums and integrals. Consistent with its higher mathematical pre-requisite, the Santa Cruz course had more of the feel of a traditional university course with instructor Herbie Lee writing out extensive expressions and derivations using a Lightboard. In contrast, the Duke course instructors stood in front of their content slides, where fully formed mathematical expressions appeared – for the most part as additional information for those students who were interested in the detail.

Both courses use R for analysis, providing detailed code and demonstration examples of Bayesian analyses. The Santa Cruz course also provides equivalent instruction for each example in Excel. These examples are an excellent start for students who want to go off and do something practical after the course – the Duke course in particular giving an extensive worked example of model selection and averaging in linear regression using the BAS package in R.

These courses both provide a learner with a motivating start for learning more about Bayesian statistics – the different styles of presentation are engaging and the amount of thought and preparation that has gone into the two courses is very apparent. The Duke course is conceptually ambitious – with its coverage of frequentist paradoxes and model selection – and a nice feature is a set of four short interviews with Bayesian academics and practitioners. The Santa Cruz course covers less ground, but does so with a well-paced higher technical intensity, building on an assumption of greater mathematical knowledge.

I'd recommend both courses to students who want to know what Bayesian statistics is about – whether or not they intend to take it further. Those intending to carry on with further study will be well prepared for higher level courses in Bayesian statistics.

Note: This review first appeared in the ISBA bulletin and is used here with their permission.

News from the Statistics Education Teams

Statistics Education News

by MAXINE PFANNKUCH

International News

The 10th International Research Forum on Statistical Reasoning, Thinking and Literacy will be held from 2 to 8 July 2017 in Rotorua, New Zealand. Maxine Pfannkuch, Stephanie Budgett and Pip Arnold are organizing the conference. Chris Wild is the keynote speaker and Anna Fergusson and Anne Patel, Auckland University, will be presenting their research. The theme of the Forum is *Innovations in statistical modeling to connect data, chance and context*. (see http://srtl.info)

USCOTS 2017, 18-20 May, the US conference on Teaching Statistics was held at Penn State University. Chris Wild was the opening keynote speaker. His topic was *Oh say can you see?* on graphics and components of visualizations. https://www.causeweb.org/cause/uscots/uscots17

World Statistics Congress 2017, 16-21 July in Marrakech, Morocco. The International Association for Statistical Education (IASE) has organized about 10 Invited Paper Sessions for this conference (see http://www.isi2017.org/)

IASE 2017 Satellite Conference, 11-14 July in Rabat, Morocco. The theme of the conference is *Teaching statistics in a data rich world*. See: http://iase-web.org/conference/satellite17/

The Tenth International Conference on Teaching Statistics (ICOTS-10), 8-13 July 2018 in Kyoto, Japan. Preparations are now underway for this conference. Abstracts for proposed papers are due 15 August 2017. See: http://icots.info/10/

Local News

People in statistics education research.

Through an invitation, **Anna Fergusson** Auckland University, is presenting again at the American Statistical Association's Teachers' Workshops as part of the Joint Statistical Meeting in August 2017 in Baltimore. As part of her preparation for this Meeting, Anna gave a very well received webinar on *Statistical reasoning with Data Cards* (see K-12-Statistics-Education-Webinars at http://www.amstat.org/asa/education/)

Anna Fergusson and **Malia Puloka** will be presenting their research at the 2017 New Zealand Association of Mathematics Conference in Christchurch. **Pip Arnold**, Cognition Education, has been invited to the USA in October to participate in an updated version of the publication GAISE (Guidelines for Assessment and Instruction in Statistics Education), which is published by the American Statistical Association.

CensusAtSchool Project. The CensusAtSchool project is currently running the 2017 survey of NZ school students, with 13,000 participating so far. **Chris Wild** and **Rachel Cunliffe** are Co-Directors of the Project and **Atakohu Middleton** writes press releases. Media coverage of initial findings from the survey on screen time, packed lunches and pocket money has been substantive. Rachel was interviewed on radio and TV about the findings. Anne Patel is responsible for the teaching resources on the website. See: www.censusatschool.org.nz

FutureLearn MOOC - Data to Insight: An Introduction to Data Analysis. Chris Wild, University of Auckland, with the assistance of **Mike**

Forster again ran this eight-week course, from March to May 2017 for 10,500 registered students. The course will start again in October this year.

The course is centered on Chris Wild's innovative software iNZight.

NZSA Education Committee, June 2017

by Mike Camden

Changing digital technology and its implications for work and society appear frequently in the media. These changes have implications for statistical education. Our initial ideas are on the CensusAtSchool website. The paper raises questions about how statistical educators can act to anticipate change and guide the further evolution of school statistics. We welcome feedback from members on this issue.

We agreed four priorities for this year. They are:

- Statistics education in the primary sector
- Establishing an online statistics teaching journal for New Zealand
- Datasets: Sourcing, processing and making fit for assessment, data that engages students
- Future of our statistics curriculum at school level.

Work is progressing on these.

Some specific issues of interest to us at present are:

- the NCEA external assessments in statistics; i.e., the exams
- the NZAMT15 conference in Christchurch in June this year: http://www.nzamt2017.com/. We plan to dialogue with teachers at a forum there.

The Ministry of Education commissioned this summary of background information for its review of curriculum and related resources: *Review and Maintenance Programme (RAMP) Mathematics and* *Statistics; Themes in the research literature;* Alex Neill and Rosemary Hipkins. The report can be accessed at https://ncea.tki.org.nz. It reflects our approach to statistical education well.

Do you need a tune-up, or (as is more likely) know some people who need one? Try this new animated educational resource from colleagues across the Tasman: http://statstuneup.com.au/.

John Harraway retired from Otago University's Department of Mathematics and Statistics at the end of April, and keeps some teaching and research activities. John has a very long history of very active involvement in statistical education, both here and internationally. He helped to bring ICOTS 3 here in 1990, took leadership in many international statistical education conferences, and chaired the IASE 2013 to 2015. He has been an active member of our education committee in our work in recent years on curriculum, assessment, resources, and software.

John's innovative work includes making the research of some of his Otago colleagues from other disciplines available as videos and datasets, and promoting access to and use of Genstat for Teaching and Learning. He remains the chair of the Advisory Board of the International Statistics Literacy Project. John has recently been promoting the magnificent ISLP set of resources at https://iase-web.org/islp/Resources.php.

Best wishes, John, and keep up your interest in statistical education!

Local News

Statistics at ...

AgResearch Statistics Group

by John Koolaard

AgResearch's Bioinformatics and Statistics Team met for a two-day meeting at the end of May in Palmerston North. This was the first face-to-face meeting of our staff from all the campuses for nearly three years. You may notice Esther Meenken in the photo, who earlier this year joined the stats group at Lincoln, after having worked at Plant and Food Research.



AUT:

Department of Biostatistics and Epidemiology

by Steve Taylor

The department has recently welcomed three new staff members: **Robert Borotkanics, Rose Sisk and Philip Prah.** Robert studied in the US and joined us from Australia. He completed his doctoral training from the Johns Hopkins Bloomberg School of Public Health and brings many international collaborations to the department. Rose joined last year as an intern and then accepted the role of Research Officer. She studied statistics at the University of Glasgow and worked for two years as analyst for NHS Scotland before moving to New Zealand. Philip also joined us from the UK where he worked for eight years as statistician on various studies including the large NATSAL study of sexual behaviour. Among other roles, Rose and Philip will be working on the Pacific Islands Families Study, which has recently commenced three new HRC-funded projects.

Last year, the department awarded **Steve Taylor** a doctoral scholarship and he has recently commenced a PhD looking at randomised trials in neurorehabilitation. **Nick Garrett** continues as head of department and **Alain Vandal** returns from sabbatical in July.

School of Engineering, Computer and Mathematical Sciences

by KATE LEE

The analytic team would like to welcome our new lecturer, Nuttanan Wichitaksorn (Nate). Nate's current specialization is Econometrics and Statistics with an emphasis on a Bayesian approach and applications in economics, finance, health science, and social science. His research interests also lie in the fields of computational statistics using Monte Carlo methods, financial analytics, skew distributions, copula modeling, robust quantile regression, and GPU-based parallel computation. Before joining AUT, Nate has been a research fellow at Thailand Development Research Institute and was a Lecturer in Statistics at University of Canterbury, New Zealand where he is now an Adjunct Fellow. Prior to that, he obtained a PhD in Econometrics from University of Sydney, Australia, and two MAs in Economics from Rutgers University, USA, and Chulalongkorn University, Thailand.

The Mathematical Sciences Research Group at AUT plans to run the 4th AUT Mathematical Sciences Symposium, 23-24 November 2017, in AUT City Campus. More details will be announced soon. Researchers in Analytics, Applied Mathematics and Statistics areas are welcome to attend.

Dr **Sarah Marshall** attended the SAS Users Conference (SUNZ) in Wellington on 11th May 2017. This event provided the opportunity to hear about new developments at SAS as well as interesting industry-based applications of statistics and analytics.

Professor **Jeff Hunter** delivered an Invited Talk on

Mean First Passage Times in Markov Chains – How best to compute? at the 17th Applied Stochastic Models and Data Analysis Conference (ASMDA 2017) held at De Morgan House, the home of the London Mathematical Society, London, over the period 6-9 June 2017.

Dr **Robin Hankin** has created a new learning resource for students of modern physics consisting of 200 video-taped lectures discussing the mathematical basis of Einstein's theory of general relativity. He has also been working in the field of formal likelihoods in competitive events and has submitted a paper to the Journal of Statistical software outlining a generalisation of Bradley-Terry likelihoods as applied to Australian Masterchef.

Dr **Murray Black** presented six sessions on the statistics used to analyse data obtained from food tasting at the Rotary National Science and Technology Forum in January. This forum was held over two weeks with AUT being one of the participating universities. There were six groups of 28 Year 12 secondary school students at the Forum from all around NZ sponsored by Rotary clubs. Included were six students from Australian schools. He also has been involved in an advisory capacity with respect to the assessment of Pacific Islanders from Samoa, Cook Islands and Fiji in the raising of statistical capacity in the workplace. These assessments form part of a national Certificate in Official Statistics.

Dr **Kate Lee** delivered an invited talk at the computational inverse problem workshop, 13-23 June 2017, at the MATRIX, Melbourne, Australia. This workshop aims to address open challenges and recent advancements in computational inverse problems.

The Department of Conservation (DOC) statistical unit is going through major changes this year. We have lost 50% of our staff to retirement. After many distinguished years with the Department, **Ian Westbrooke** has called it quits. Although the Department suffers a real loss without him we will continue to leach information from him when he isn't too busy as the NZSA president. Luckily we welcome **Helene Thygesen** as the new principal science advisor (statistics). Helene has a PhD in biostatistics from Amsterdam and has worked in cancer research, biosecurity and various other areas of applied statistics. She will be attending the Statistical Ecology and Environmental Monitoring (SEEM) conference in Queenstown this December and likely working out of the Hamilton office. **Sophie Kincaid**, a recent graduate from the University of Auckland, has also joined DOC for analysis and reporting on community based kiwi call monitoring data. As always we deal with problems in ecology as well as recreation and historic data which keeps things very interesting.

Massey University Albany

There are currently five academic staff in statistics at Massey University's Albany Campus in Auckland, after the recent departure of Drs **Howard Edwards** and **Daniel Walsh**.

Prof Marti Anderson is busy working on research funded by a Royal Society of NZ James Cook Fellowship, which includes collaboration with Perry de Valpine at UC Berkeley; the research is entitled: New multivariate statistical models of ecological communities: estimation, power Marti is also working on a and prediction. Marsden-funded project (as co-PI, with Dr Clive Roberts of Te Papa) on the phylogenetic and functional diversity of New Zealand's marine fishes. Marti, along with Matthew Pawley, Adam Smith, and some other colleagues and students, presented at the International Temperate Reefs Symposium in Pisa, Italy, in July 2016.

Dr **Barry McDonald** took part in the Mathematics in Industry Study Group Workshop in July 2016, in Kyushu and Tokyo, as part of a delegation of New Zealanders active in the Mathematics in Industry community in New Zealand. Funding was provided by the Japanese Government through by Adam Smith

Kiwinet. In August, Barry visited the Pew Research centre in Washington DC to study their methods for demographic analysis of religion data.

Dr **Beatrix Jones** travelled to Sardinia in June 2016 to give the presentation *Decoupled Shrinkage and Selection for Gaussian Graphical Models* at the International Society for Bayesian Analysis (ISBA) meeting. She is now the editor of the ISBA Bulletin, ISBA's quarterly newsletter. Anyone wishing to write about New Zealand Bayesian activities for the Bulletin should feel free to get in contact.

Dr Matthew Pawley (with co-PI Dr David Aguirre) obtained an Unlocking Curious Minds grant from MBIE for a project aimed at stimulating participation in STEM by Māori tamariki. The project taught kai tiaki (guardians) from Ngati Whatua o Kaipara to use mātauranga taupuhi kaiao (traditional ecological knowledge) to monitor their kaimoana. Specifically, students learnt how drones, ground-penetrating radar and eDNA might be used to survey toheroa. A follow-up hui at Massey University (Albany) taught the students how to analyze the spatial data, and described how data mining methods might be used to detect shellfish populations from drone footage. Mat is also collaborating with our computer scientists to work on methods of automatically classifying individual dolphins using photographs of their fins.

Dr Adam Smith has been busy preparing for a scientific expedition to New Caledonia, Fiji, and Tonga, on board the RV Braveheart (39 m) in July-August 2017. The trip is being organised by Dr Tom Trnski of Auckland Museum, and

will also involve a few other Massey colleagues, including Dr David Aguirre, Dr Libby Liggins, and Ms Emma Betty. The expedition aims to survey marine ecosystems at some of the world's most remote and undisturbed islands and atolls. Adam will focus on using the latest stereo-baited-remote-underwater-video and diver-operated-video methods to survey sharks and other fishes, in collaboration with and funded by the Global FinPrint project.

Massey University, Palmerston North

by Jonathan Godfrey

For the most part life has been fairly quiet for the Statistics and Bioinformatics Group of the Institute of Fundamental Sciences. Among the ongoing cycle of reviews and restructuring, our group continues to do all the things we've done before and weather the storms; our current strategy for weathering the storm is to let **Martin Hazelton** fill in as Head of Institute for the next 14 months. Perhaps the most excited (editorial licence used there) among us is **Mark Bebbington** who takes over as group leader for that time.

Geoff Jones travelled to Vietnam in June to take part in a workshop planning the next stage of a multi-country study into the endemicity of H5N1 (bird flu) organised by the UN Food and Agricultural Organization. **Jonathan Godfrey** is about to travel to The Netherlands and the USA in search of blind students willing to test out the latest in interactive graphics designed specifically for blind R users. He will attend the Annual Convention of the National Federation of the Blind in Orlando – a conference that expects to attract around 3000 people, most of whom will be blind. Dates for our regular outreach events are set down for 2017. 19 teams have registered for the M3S Massey Manawatu Maths and Stats Competition for Year 12 students, which is being held on 30 June. The competition follows on from the Maths in Industry Workshop (MINZ) being held on campus that week so that the year 12 students and their teachers can attend the final problem presentations. The Massey Maths and Stats Forum and Stats Research Forum is being held on 24 November; only preliminary planning has been done to date, so look out for further announcements if this event is of interest to you.

Penny Bilton successfully defended her PhD thesis *Tree-based Models for Poverty Estimation*, supervised by **Geoff Jones**, **Siva Ganesh** and **Steve Haslett**, and graduated in May; **Nadeeka Premarathna** has submitted her PhD thesis and is looking forward to her defence in July.

We still see our most recent retirees, **Chin-Diew Lai** and **Doug Stirling**, albeit less frequently; we are in good spirit; and there is enough good news for us in the aforementioned reviews to remain optimistic about our future as a group. We have had some comings and goings at Plant and Food. **Peter Alspach**, based at our Motueka site, retired in February. Peter had worked for PFR and two of its predecessors (DSIR and HortResearch) since 1979, and was a valued collaborator and mentor to the scientists there, to plant breeders throughout PFR, and to the rest of the biometrics team. Peter's retirement left a large gap – at least four of us are covering bits of work he used to do. He is aiming to spend more time with his family, and continuing his love of the outdoors and the environment, biking and tramping.

We also bade farewell to **Esther Meenken** who popped across the road to our sister CRI, AgResearch. Esther's most recent work included development in uncertainty estimation applied to crop modelling activities. This of course left some of us guessing.

On the other side of the ledger, we have just been joined by **Maryam Alavi**, who did her PhD at Auckland University, and has been doing post-doctoral work there with the Chemistry department on monitoring air quality.



The PFR biometrics team (L to R Carmel Woods, Duncan Hedderley, Mark Wohlers, Ruth Butler, Andrew McLachlan, Peter Alspach, Lindy Guo, Peter Jaksons, Linley Jesson, Kate Richards)

It has come to our attention that it is a very long time since you had a report from Statistics New Zealand, so there is a lot of news.

Firstly, as those of you that consult our web pages (and that should be all of you reading this) will know our branding has changed. We now use StatsNZ as our moniker. While orange is our new black we can assure you we aren't now competing with Serco. Our task remains as ever, producing a range of numbers to inform.

The biggest news is the November 2016 Like after the earthquake in earthquake. 2011, StatsNZ managed to continue to produce scheduled outputs with little or no delay, a credit to the dedication of staff across the 3 centres where we are based. As many of you know the earthquake severely damaged our Wellington building. In fact it's so bad there is a real possibility that very little inside can be retrieved. At least those in Christchurch in 2011 got many of their possessions out. We are now in temporary digs in Wellington with the meeting rooms in a separate building. Those of you who know Wellington will appreciate why getting to a meeting is sometimes described by my colleagues as 'bracing', 'challenging' and a few other words I cannot put to print. Also our Auckland office has moved to the New Zealand Mint building on Greys Avenue.

As there have been a lot of staff changes in the Statistical Methods area since our last report I thought it would be useful to list all the statisticians we have as we don't list people in StatsNZ on our website. As I am often asked by academics about former students, and vice versa, I got people to list where they got their degree, though there is some nonresponse (probably MAR). Drum roll please. In SM as I write are: Aaron Beck, Abby Morgan (Canty), Alison Livingston (Massey), Alistair Ramsden (Auck), Allyson Seyb (Otago), Anapapa Mulitalo, Andrew Black (VUW), Andrew Richens (Canty), Anna Lin (Canty), Anna MacDonald, Antony Gomez (VUW), Caleb Moses, Chen Chen, Chris Bryant (Canty), Chris Hansen, Christine Bycroft (Otago), Felibel

Zabala (Auck, Philippines), Frances Krsinich, Gareth Minshall, Ho Chang Choi (Canty), Jamas Enright (VUW, Massey), Jeni Darnbrough, Joe Winton, John Crequer (Canty, Lincoln), Julia Hall (Otago), Larry Zhang (Regina), Lena Rodnyanskiy (Canty), Lilian Morrison (Massey), Lyco Wen, Matthew Brown, Michelle Feyen (Otago), Naeimeh Abi (Canty), Nancy Wang (Otago, VUW), Natalie Mawson (VUW), Nathaniel Matheson-Dunning (Auck), Patrick Graham (Massey, VUW), Penny Barber, Peter Qiu (Canty), Rebecca Green (Massey), Richard Penny (Canty), Rochelle Morgan, Rosalia Rohwer (Canty), Ryan Buchanan, Sharon Snelgrove (VUW), Sini Miller (Lincoln, Turku), Stephen Challands, Susmita Das (Virginia -Charlottesville), Temaleti Tupou, Thanh Nguyen, Tianying Chu, Tracey Savage (Canty), Vic Duoba, Vinayak [Vinny] Anand-Kumar (Auck), Vince Galvin, Wendy Dobson (Bath), Wilma Molano (Philippines). As you can see we are a big group of statisticians.

SM people have been to a fair number of conferences recently. Allyson Seyb was on the organizing committee for the International Total Survey Error Workshop (ITSEW16) in October last year in Sydney. She attended along with Patrick, Felibel and Christine. They presented, chaired and were discussants for various sessions. Nathaniel has recently presented a paper at the recent New Technologies and Techniques for official statistics (NTTS17) in Brussels. Coming up is the ISI World Statistical Congress in Marrakech, where Tracey is organizing a Special Topic Session on Strategies and methods for dealing with population over-coverage in administrative data, and **Patrick** is presenting a paper in the session. Locally we have a large presence at the 2017 PANZ conference in Christchurch as 2018 is Census year and we have major developments for future Censuses to report on. Christine, Anna and Nathaniel are presenting and Ho-chang, Megan, Aaron and Sini are attending that one. Also **Vinny** is presenting at the NZAE conference in Wellington.

Recently published are two StatsNZ Working Papers, Accurate calculation of a Gini index using SAS and R by Vic Duoba and Nairn MacGibbon, and Estimating infant mortality by ethnicity -New methods for dealing with inconsistent ethnic reporting and small numbers by John Bryant and Anne Howard. Both can be downloaded from the StatsNZ website, a good source for data, information, news and jobs at StatsNZ.

StatsNZ are developing a new Business Data Collection, which will provide quarterly indicators of sales, purchases, salaries and wages, and profit for businesses across most industry sectors in New Zealand. In March this year we released, for the first time, the initial series from the new collection on the StatsNZ Innovation Site. These data are produced using an 'administrative data first' approach, to reduce the burden on our respondents. In the long term, these data will feed in to a new quarterly income

measure of GDP (GDPI). We are releasing these data on an 'experimental' basis to get feedback on the approach and methodology we're adopting. For more details please contact chen.chen@stats.govt.nz. As part of StatsNZ's vision to unleash the power of data to change lives, data from the Survey of Family, Income and Employment was made available to researchers at the Victoria University of Wellington's Institute for Governance and Policy Studies. The aim of the research was to track individuals' earnings, assets, and wealth between 2002 and 2010. Max Rashbrooke, his father Geoff Rashbrooke, and StatsNZ analyst Wilma Molano looked into the data to extrapolate a nationwide snapshot of individuals' wealth. Their findings suggest limits to social mobility.

For more on their findings, see the Stuff article Most people have few assets and less than \$10,000 cash in the bank: new research.

Statistics Research Associates

by ROBERT DAVIES

Statistics Research Associates is a small statistics research and consulting company originally set up in 1999 by statisticians formerly with Victoria University and DSIR.

The main news is that **David Harte** has rejoined us 2 days a week. He is still at GNS 3 days a week. He intends to continue research on self-exciting point processes in the two days with us but is prepared to give the occasional course on R.

John Maindonald has resumed work in which he was involved more than two decades ago when he was employed by DSIR, finding new insights that come with time and new tools. Over summer, he helped in the supervision of a student who was employed by Plant and Food to collate and run summary analyses on all data available internationally on cold treatment disinfestation for four fruit fly species. Another interesting project, again with Plant and Food, concerns the electrical properties of fruit and other organic produce. In his spare time he is giving a course on "Thinking Critically about Data" for VUW Continuing Education and is a moderator at this year's Maths in Industry week.

Alistair Gray works mainly for government agencies. Currently he is working with NRB Ltd on the design and implementation of the second national panel survey of marine recreational fishers commissioned by the Ministry of Primary Industries. This is a mixed mode household survey with fishers reporting weekly over the coming fishing year.

Peter Thomson continues his involvement with NIWA (contract research) and the VUW School of Economics and Finance (adjunct Professor).

Robert Davies is doing occasional work for Opus International Consultants, currently on the quality of aggregate used in road construction.

John celebrated a significant birthday this year. Robert and David also celebrated significant birthdays, but of lesser significance than John's.

Department of Statistics, The University of Auckland

The Ross Ihaka Lecture Series – a new, annual event

In March, to mark Ross Ihaka's impending retirement, we inaugurated the annual Ross Ihaka Lecture Series – four Wednesday evening lectures over a month. They were tremendously successful, attracting large and youthful audiences. Watch the speakers online: R wizard Hadley Wickham, *New Zealand Herald* digital editor Harkanwal Singh, Rice University's Genevera Allen, and Ross Ihaka himself.

New faces

Professor Judi Hewitt has joined our team. She is a soft-sediment benthic ecologist and a principal scientist in marine ecology at NIWA, the National Institute of Water and Atmospheric Her interests include coastal and Research. estuarine marine ecology; biological and ecological mapping; ecological impact assessment and design and implementation of ecological monitoring Judi will be embedded in the programmes. Department every Friday, and we are looking forward to the new ideas and collaborations that her presence will bring. She is a recently elected Fellow of the Royal Society of New Zealand and the first woman to be a Professor in our Department. Judi's email here is jhew020@aucklanduni.ac.nz.



Dr **Binyamin Oz** from Israel has joined the Department of Statistics as a Postdoctoral Research Fellow to work alongside Associate Professor **Ilze Ziedins.** He says poetry exists in modelling strategic behaviour. "You take some abstract idea or a message you want to deliver, and you do it with a minimal amount of words (in poetry) or mathematical symbols and expressions (in modelling). You always try to do it in the most elegant and concise way that still captures your abstract message." More here.



A familiar face returns:

Dr **Ben Stevenson** has returned to us after doctoral study at Scotland's University of St Andrews. Ben, who did his BSc(Hons) and MSc degrees in the Department of Statistics, says he didn't need to think twice when he was offered a job working alongside the department's Associate Professor **Rachel Fewster**. Details here.



Fighting serious disease with statistics

Dr **Yalu Wen**, who won last year's Worsley Early Career Award, has described how seeing two of her grandparents die of cancer put her on her career path. More here.



What Kiwi kids are thinking, feeling and doing

CensusAtSchool/TataurangaKiTeKura 2017 is underway, with 331 teachers from 694 schools registered at the time of writing. So far, the data gathered has led to three media releases, all of which have enjoyed plenty of media attention. Tuck shops are losing out to home-packed lunches, and it appears that most school kids have no screen-time limits. CAS has also found out that six in 10 schoolchildren reported that they received pocket money, an allowance or a cash gift the week before participating, getting a median of \$15.

Departures and retirements

David Scott retired at the end of semester one after 22 years in the Department of Statistics. But he's still doing consulting, as well as tweaking the R packages he either wrote or supports and posting his statistics-driven rugby union and rugby league predictions on the department's popular blog, Stats Chat.

Brian McArdle has retired. At his farewell in April, many spoke of their gratitude for his contribution to statistical ecology, the help he gave to graduate students, his absolutely outstanding lecturing, his tremendous sense of humour, and his kindness.

Mark Holmes has taken up an Associate Professorship and ARC Future Fellowship at the University of Melbourne. At his farewell, his quirky sense of humour shone with a performance of his own version of Frank Sinatra's *My Way*, in addition to a very gracious farewell speech. Mark has been a champion for improving the mathematical preparedness of our incoming students, and for giving our students a solid grounding in mathematical statistics. Both Brian and Mark will be greatly missed.

University of Otago

Department of Mathematics and Statistics

by Austina Clark

After 52 years continuous teaching, Associate Prof **John Harraway** has formally retired from the University of Otago in April this year. John will continue to teach in semester 2 and carry out some research projects. Over the years John has taught more than 36,000 students; his service and legacy will be long remembered.

Division of Health Sciences

by Claire Cameron

Biostatistics in the Health Sciences Division ticks along. In Dunedin, the big news has been that **Ella Iosua** had her wee baby boy, Anlon, in March. A number of us attended the celebration of **John Harraway**'s retirement at the end of April. After 52 years, he has almost said goodbye to the University. In May, we had a couple of people interviewed for the position of Director of the Biostatistics Unit (that doesn't yet exist) and we are waiting patiently to hear about the outcome from that. We all (across the three campuses and, sometimes, **Peter Herbison** in Bannockburn) continue to meet monthly to discuss various aspects of statistical practice.





The Statistical Consulting Centre, Department of Statistics, The University of Auckland, New Zealand, presents the following two-day course:

Analysis of time-to-event (survival) data

Professor Thomas Lumley

Tuesday 12th and Wednesday 13th September, 2017

This workshop will cover data exploration, data summaries, and regression modelling for time-to-event data. There will be both lecture and practical sessions.

Topics:

- Concepts: censoring, truncation, competing risks, choice of time scale
- Summaries: the Kaplan--Meier curve; mean, median, and proportion surviving; the hazard rate; graphical exploration
- Two-sample testing: the logrank test and its strengths and weaknesses
- The proportional hazards model: right censoring, left truncation
- Time-varying predictors
- Modelling recurrent events

Participants should be familiar with linear and logistic regression, and should bring a laptop with suitable statistical software. R is preferred, but assistance may be available with Stata and SAS.

Instructor: Thomas Lumley is Professor of Biostatistics at the University of Auckland. He has taught survival analysis at introductory and advanced levels, and has developed software implementations and new methodology.

Registration: Registration will open early July. Regular registration fees will be available until 15th August and late registration until 8th September.

You can find registration details and other updates on: <u>https://www.stat.auckland.ac.nz/en/about/statistical-consulting-centre/workshops1.html</u>

For addition information email: rk.barraclough@auckland.ac.nz