



The New Zealand Statistical Association Newsletter

Number 82

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Welcome

by VANESSA CAVE

It is a pleasure to service you as the NZSA President. I feel honoured (albeit a little daunted!) to be succeeding Ian Westbrooke, and look forward to contributing to the NZSA's future development, including in Ian's words "stepping up NZSA's involvement in the Data Science/Analytics area". We reflected upon this, and more broadly on the future of Statistics and the role of the NZSA, during the panel discussion at our recent conference. Why does the NZSA membership remain fairly static, and largely university based, when the number of people working in applied data areas is rapidly expanding? Is this a concern? I welcome your feedback and ideas on what next for the NZSA.

We finished the year on a high note with a very successful joint NZSA and ORSNZ conference in Palmerston North. My sincere thanks to the co-chairs, Katharina Parry and Jonathan Godfrey. It was a delight to celebrate the achievements of our 2018 Campbell Award recipient, Rachel Fewster, and our 2018 Worsley Early Career Researcher, Claudia Rivera-Rodriguez during the conference dinner. You can learn about their impressive achievements on [page 10](#) of this newsletter.

NZSA is very important in my professional life, and I've made many friends amongst our membership since joining all those years ago. I look forward to working both with and for you, and I hope to see many of you at our 2019 conference in Dunedin.

Finally, especially for those that discovered their paper plane folding skills were sub-par at the conference dinner, you can get some tips here: <https://www.thepaperairplaneguy.com/>

Ngā mihi,
Vanessa



Editorial

by MARIE FITCH

Kia ora koutou,

I hope you all managed a refreshing break during the holiday period. Unusually for us we enjoyed a staycation. (The longer holiday had occurred in September last year.)

This newsletter sees the first of what I hope will be a regular column where several NZSA executive members introduce themselves. (See [here](#).) So I thought maybe I should tell you a bit about myself by answering the questions I have posed to them.

I have been the editor of this newsletter since the beginning of 2016, making this the seventh newsletter for which I have been editor. It was only after I had agreed to be the editor that I realized taking on this role automatically made me a member of the executive! I am also a member of the NZSA education committee.

I started my working life as a high school mathematics teacher, one of the few at that time with a mathematics degree that included a lot of statistics. I now enjoy teaching Statistics at the University of Auckland.

Outside of work I enjoy spending time with our grandchildren (currently four girls), reading and, when time and weather permit, getting out and enjoying our great NZ bush.

The next newsletter is planned for July 2019 so if you have ideas or contributions for it please contact me.

Ngā mihi,
Marie



Conferences

2018 NZSA Conference

by RINA PARRY AND JONATHAN GODFREY (LOCAL ORGANISING COMMITTEE CO-CHAIRS)



The Joint NZSA+ORSNZ Conference was held on Massey's Manawatu campus, 27-30th November 2018. The conference was chaired by Dr **Jonathan Godfrey** and Dr **Katharina Parry**. Highlights of the conference included the keynote sessions that were entertaining as well as highly informative. Professor **Jean Yang** (University of Sydney, Australia) told us about her work on extracting the most out of biomedical data and how her research motivated an overhaul of how her first year statistics courses are now taught. Associate Professor **Ilze Ziedins** (University of Auckland) gave a talk on her work in modelling and optimisation of health care delivery, an application that perfectly bridges the worlds represented by the two societies running the conference. Professor **Geoff Jones** (Massey, one of us! one of us!) talked about his research leading him to embrace the Bayesian way. Professor **Stefan Nickel** (KIT, Germany) started a possibly new trend of interactive presentations, where the audience was invited to choose what topics related to

health care logistics they would like to hear more about. And last, but not least, Professor **Alan Walsh** (ANU, Australia) delivered a talk about using bootstrapping in generalised regression estimation. This conference also featured the first inaugural ANZ Journal of Statistics discussion paper, presented by Dr **Francis Hui** (ANU, Australia) about testing random effects in linear models and how this motivates another look at the F test. The conference then wrapped up with a discussion panel on what the future of statistics might look like, with **John Maindonald**, **Marie Luckman**, **Ian Westbrooke** and **Vanessa Cave** setting the scene by each giving a perspective from both industry and academia. The Analytics Forum was another good reason to have been there, as it continues to allow for some great connections to be made between the academic world and industry.

A report on (and photograph of) the recipients of two NZSA awards can be found later in the Newsletter, [here](#).

Harmonic Analytics Student talk award winners were: Olivia Angelin-Bonnet (1st), Ling-yu Li (2nd), Anjali Gupta (3rd), Timothy Bilton (highly commended) and Poppy Miller (highly commended)



Student talk award winners (from left): L to R Poppy, Vanessa Cave (President NZSA), Ling-yu, Timothy, Olivia, Lisa Chen (Harmonic Analytics), Ian Westbrooke (outgoing President NZSA), Anjali.

See more photos from the 2018 conference at:

<https://www.flickr.com/photos/111101747@N06/albums/72157704245139405>

2018 Australasian Applied Statistics Conference

by HAROLD HENDERSON



The Australasian Applied Statistics Conference (AASC18) and pre-conference workshops, held from 3rd – 7th December 2018 at the Millennium Hotel, Rotorua, were an excellent opportunity to liaise with fellow statisticians within the agricultural, biological and environmental sciences and to keep abreast of the most recent developments in statistics within this context.

The themes of AASC18 were big data analytics, reproducible research, history of ANOVA and REML, experimental design, statistical consultancy in the biosciences, and applied statistics. Invited speakers and workshop presenters (**Chris Auld**, **Peter Baker**, **Salvador Gezan**, **Roger Payne**, **Alison Smith**, **Robin Thompson**, **Linley Jesson**, **Ruth Butler**,

Gabriela Borgognone and **Helene Thygesen**) helped explore these themes in various contexts.

The workshops were:

Scaling R in the Cloud with doAzureParallel (**Chris Auld** and **Nigel Parker**, Microsoft)

Genstat 19ed Masterclass: how to get the analyses you need, the output you want, and the graphs you prefer (**Roger Payne**, **David Baird** and **Vanessa Cave**, VSNi)

Tools for Efficient Data Analysis Workflow and Reproducible Research (**Peter Baker**, University of Queensland)

Modelling correlations between observations in agricultural and environmental sciences with ASReml-R (**Salvador Gezan**, University of Florida)

Post Conference Goodies including most presentations and photos are available. (see <https://www.aasc.nz/post-conference-information/>)

The conference was organized by **David Baird** (Chair), **Chris Triggs** (Treasurer), **Vanessa Cave** (Secretary), **Andrew McLachlan** (On-site Technology) and **Hans Hockey** (Photographer).



(L to R) Andrew McLachlan, Chris Triggs, David Baird, Vanessa Cave, Hans Hockey



Statisticians at play

2019 NZSA Conference

The 2019 NZSA conference will be held from 26 to 28 November at the University of Otago, Dunedin. Please note these dates in your diary

now and watch the NZSA website (www.stats.org) for further announcements.

Obituary: Hamish Thompson

by ROBERT DAVIES



Hamish Thompson 1926-2018

Hamish Thompson died in June 2018 at the age of 91.

Hamish was director of DSIR's Applied Mathematics Laboratory/Division from 1963 to 1982. Previously, from 1948-63 he had been Applied Maths Lab's statistician at DSIR's station at Mt Albert in Auckland.

Hamish's secondary education was at Takapuna Grammar where he was co-dux and won a Junior University Scholarship. This was followed by an MSc and a Senior Scholarship in Applied Mathematics at Auckland University College (University of New Zealand).

He had three years leave from DSIR to do a PhD at Manchester University under Maurice Bartlett. His thesis was on "Spatial Point Processes with Applications to Ecology."

After his time at the Applied Maths Division he moved to DSIR Head Office as a Chief Director for the Resources group of Divisions (Geology, Geophysics, Oceanography, Soil, etc) until he retired in 1987.

His work at Mount Albert involved working with DSIR scientists and led to papers on experimental design, truncated distributions and analysis of spatial data. He also became involved with industrial problems, particularly with TEAL (now Air New Zealand) and Amalgamated Brick and Pipe.

During his time as Director there was the move to the Rankine Brown building at Victoria University, the commissioning and later decommissioning of the Elliott 503 computer (the large, for those times, scientific computer, used by DSIR, other government departments and Victoria University), establishment of an Operational Research section and a substantial expansion of the Statistics, Maths, Physics and Computing sections with staff numbers reaching a maximum of 65 including computer operators and engineers.

Hamish seemed to be able to find extra positions if he found someone he wanted to employ. He carried out very careful planning to give staff the best chance of promotion in DSIR's arcane promotion system. The Applied Maths Division (AMD) usually employed several students over the summer both to evaluate them but also to give them a taste of real world applied mathematics and many will remember with affection their summer at AMD.

Stories of interest

Meet the NZSA Executive

At the 2018 AGM, which was held during the 2018 conference, Vanessa Cave was elected as President. She took over from Ian Westbrooke who was the President for the previous two year.



*Vanessa Cave, NZSA president 2019, and
Ian Westbrooke, NZSA President 2018*

Daniel Gerhard

Since the end of 2016, I have been the treasurer of the NZSA. The task involves mainly the preparation of the yearly financial report and management of the statistics association's financial accounts.

I am a Senior Lecturer in the School of Mathematics & Statistics, University of Canterbury. Actually, my position is split into two parts: I am teaching and doing research in applied statistics, but as a member of the Statistical Consulting Unit at UC, 50% of my job also consists of helping staff and students with their data analysis.

I am not a statistician by training, but I completed a degree in horticulture. In my free time, I still enjoy everything related to growing plants and doing some gardening as a hobby.

In this new column in each newsletter some of the current NZSA executive will introduce themselves. The brief they have been given is to provide a photograph and a paragraph answering some or all of the following three questions.

- What is your current role on the NZSA executive? How long have you been doing it? What (if any) other roles have you had?
- What is your job/connection to the NZ statistics community?
- What do you enjoy doing outside of work?



Lisa Thomassen

I am currently the student and early career representative on the NZSA committee. I have been in this role for two years now which has seen me organise networking events in multiple parts of the country. One of my key responsibilities is organising the networking events which happen each year at the NZSA conference. I also work alongside a team of regional reps who organise events throughout the year.

I am currently working as a statistician for the Fonterra Research and Development Centre. My role provides stats support for projects experimenting on delicious dairy products which include cheesecakes and pizzas.



Harold Henderson

I have been NZSA membership convenor since 1999 and a long-time member of the executive. I previously served as joint editor of the newsletter (1989-93) and President (1993-5).

I work as a statistician at AgResearch Ruakura, currently in phased retirement on 3 days a week. I enjoy our lifestyle block, body surfing at **Raglan** and barbershop singing. And I claim to make the best carrot cake in Hamilton.



Matt Parry

I am the new NZSA secretary, taking over from Vanessa Cave. I was co-opted onto the executive last year and was on the non-editorial management team of the ANZJS with Matt Schofield. I am also a member of the Statistics Education sub-committee.

I am a senior lecturer in the Dept of Mathematics and Statistics at the University of Otago. I feel very lucky to be working with a number of people across the University, AgResearch and in industry. Recently I have been involved with colleagues in Computer Science and Information Science setting up a new major in Data Science.

I am a cricket tragic, currently living vicariously through my children! I am often to be found coaching cricket, pacing nervously around the boundary, or watching cricket in the stand at the University Oval while editing papers. I claim to make the best Thai fried rice in Dunedin.



NZSA Awards 2018

NZSA Campbell Award

The Campbell Award is the Association's premier whole-of-career award, aimed at recognising an individual's sustained contribution to the promotion and development of statistics. Nominees must excel in at least one of the following areas: statistical research, statistics education, major contributions to New Zealand through statistical projects, and a sustained record of leadership in, and service to, statistics in New Zealand.

Rachel Fewster

University of Auckland

It is a measure of Dr Rachel Fewster's all round excellence that her achievements to date address the multiple criteria for the Campbell Award. On research, Dr Fewster has an exceptional and sustained body of work developing improved methodology for estimation of population size and for understanding population dynamics, especially those of endangered species and invasive species. Rachel has received several teaching awards, including twice being a recipient of the National Tertiary Teaching Excellence Award (2003 and 2009). Dr Fewster has been actively consulting with the NZ Department of Conservation and Regional Councils for many years, and she has developed software for citizen science, whereby individuals and community groups can directly see the value of statistics by actively participating in the collection (and analysis) of community trapping and monitoring data.



Worsley Early Career Award

The Worsley Research Award recognizes outstanding recent published research from a New Zealand statistician in the early stages of their career. In particular, applicants must be within seven years of confirmation of their PhD. New Zealand is fortunate to have some excellent young statisticians, so this year's recipient is joining a distinguished group.

Claudia Rivera-Rodriguez

University of Auckland

Dr Rivera-Rodriguez focusses on two-phase sampling designs and the improvements these can provide in the analysis of medical data. Claudia successfully speaks the language of both biostatistics and epidemiology, and her work represents strategies that are both powerful and practical.



Updates

Student & Early Career Statisticians Network

by LISA THOMASEN



Well done to the Massey Palmerston North organisers of this year's NZ Mathematics and Statistics Postgraduate Conference. There was some great feedback from the conference. Congratulations to **Rory Ellis** who won the award for best statistics presentation. Thanks to all of you who came to the networking event at Wharerata as part of the joint NZSA/ORSNZ conference in November. There was a great turnout with lots of great networking discussions. A big thanks to Minitab and the NZSA for sponsoring the drinks and nibbles for this event.

If you would like to see a networking event in your part of the country this year, get in touch with one of our SECS reps. We always welcome ideas for new events.



Students and early career statisticians networking at Wharerata

News from the Statistics Education Teams

Statistics Education News

by MAXINE PFANNKUCH



The Tenth International Conference on Teaching Statistics (ICOTS-10), 8-13 July 2018 in Kyoto, Japan.

Many New Zealanders presented papers at this International Association for Statistical Education (IASE) conference. In fact, 17 NZers were at the conference with 12 of them from Auckland University (see photo), the largest contingent from any university and more than the UK and many other countries. **Chris Wild, Pip Arnold, and Stephanie Budgett** were Topic Convenors. Chris Wild was a keynote speaker. Pip Arnold, **Rachel Passmore, Anna Fergusson, Liza Bolton, Anne Patel, Marie Fitch, Mike Forster, Chris Wild, Rhys Jones and Maxine Pfannkuch** (on behalf of **Malia Puloka**) from Auckland University, **Jennifer Brown** from Canterbury University, **Sashi Sharma** from Waikato University and two retirees, **Sharleen Forbes** and **John Harraway**, presented papers.

For the Excellence Awards for Early Career Researchers, five people were given awards, two of which were NZers **Pip Arnold** and **Rachel Passmore** (University of Auckland) who were awarded Highly Commended for their ICOTS papers. (See [the conference proceedings](#).)



University of Auckland delegates at the ICOTS-10 conference in Kyoto, Japan

Statistics Teacher Day, 27 November 2018, Auckland.

The Department of Statistics, Auckland University and the Auckland Mathematics Association organized and ran a very successful Statistics Teacher Day with about 250 teachers attending. The day was very ably led by the convenors, **Emma Wilson, Marie Fitch and Rhys Jones**. The plenary speaker was **Jackie Carter**, Manchester University, who gave a very interesting talk on “*The Transformational Power of Numbers*”. Workshops for teachers ranged from introducing new teachers to the current NZ statistics curriculum to introducing teachers to what a future statistics curriculum might include. **Shunya Koga**, University of Tsukuba, Japan, attended the Day to find out about NZ statistics education as he intends to do some NZ case

studies for his doctoral research next year.

Other regional associations that ran mathematics and statistics teacher days at the end of 2018 were: The Bay of Plenty Mathematics Association, Manawatu Mathematics Association in conjunction with the NZSA annual conference, Wellington Mathematics Association, and the Otago Mathematics Association where Anna Fergusson was invited to present workshops on teaching statistics from a data science perspective.

People in statistics education research

Congratulations to **Pip Arnold** (Karekare Education) for gaining the 2018 Beeby Award to develop resources to support statistics teaching and learning in the New Zealand Curriculum and Te Marautanga o Aotearoa for the Year 1 to Year 11 levels. The resources, centred around statistical investigations, will be extensively tested in schools. Pip was in Georgia, USA in December to participate in the updating of the American Statistical Association (ASA) GAISE (Guidelines for Assessment and Instruction in Statistics Education) document.

Anna Fergusson presented two workshops at the ASA Teachers' Workshops as part of the Joint Statistical Meeting in July 2018 in Vancouver. Her talk on large-scale interactives for large-enrolment courses was well-received. Anna is currently working with the ASA on an upcoming publication for teachers featuring statistical modelling activities, in the roles of co-editor and graphics editor.

Amy Renelle under the supervision of **Stephanie Budgett** and **Rhys Jones**, did her Honours project on "*An Examination of Participant Perspectives on the Scampy Tool*", a study involving undergraduate students' conceptions of randomness.

Rhys Jones organised a two-hour session in conjunction with **Pip Arnold** for Mission Heights Junior College teachers on how statistics is used in the outside world. **Rachel Fewster**, **Liza Bolton**, **Kathie Ruggiero**, **Thomas Lumley** and **Stephanie Budgett** participated. The impetus for the session arose from a Teacher Led Innovation Fund Project where teachers wanted to know how they could link their own teaching of statistics in

mathematics, science, PE and global studies to a variety of interesting contexts and real-world examples.

Maxine Pfannkuch, through a three-week Visiting Scholar Award to Tasmania University, gave an Early Career Teacher Day presentation, a keynote talk to the Mathematics Association of Tasmania, a public lecture at the University of Tasmania in Launceston, which was recorded live and made available to the public, an ABC radio interview (see photo) on her public lecture and a research seminar at the University of Tasmania, Hobart, which was streamed live to people at the Burnie and Launceston Campuses. Maxine has finally finished as Editor of the Statistics Education Research Journal with the publication of the November 2018 issue. At the ICOTS-10 conference she was given an award by IASE for her services to the journal.



Maxine on left at her ABC radio interview in Launceston, Tasmania

International Data Science in School Project.

Details of a global project to beef up the teaching of data studies in high schools throughout the world and train teachers in data science as a science of central importance were recently released by the International Data Science in Schools Project (IDSSP). The IDSSP interprets data science as the science of learning from data, an interdisciplinary subject drawing on disciplines including statistics, computer science, mathematics, communication, and soft skills. The last decade has seen spectacular growth in data collection and usage in most areas of human endeavour—from government to business, to health, science and the environment. **Chris Wild**, is a spokesperson for the group and the NZ

representative along with **Anna Fergusson** and **Michelle Dalrymple** (Cashmere High School). Chris says: “The scale and complexity of the data now being amassed are far beyond the ability of single computers or individuals to manage. We need teams of data science experts working together in real time, around the world. That is why we have launching an urgent project aimed at meeting the global shortfall in trained data science professionals.”

The aim of the IDSSP is to transform the way data science is taught in the last two years of secondary school. Its objectives are the following:

1. To ensure school children develop a sufficient understanding and appreciation for how data can be acquired and used to make decisions, so they can make informed judgments in their daily lives as children and then as adults
2. To inspire school students to pursue tertiary studies in data science and its related fields, with a view to a career.

The following two curriculum frameworks are being created to support development of a pre-calculus course in data science that is rigorous, engaging, and accessible to all students:

- Framework 1 (Data Science for Students) is the basis for developing a course with a total of some 240 hours of instruction.
- Framework 2 (Data Science for Teachers) is designed as the basis for guiding the development of teachers from a variety of backgrounds (e.g., mathematics, computer science, science, economics) to teach a data science course well.

The project is a collaborative activity involving leading computer scientists, statistical scientists, curriculum experts and teachers from Australia, Canada, England, Germany, The Netherlands,

New Zealand, and the United States and supported by several national and international societies, groups and companies. Chris envisages the material will be used not just in schools, but also as a valuable source of information for data science courses in community colleges and universities and for private study.

Draft frameworks are scheduled to be published for widespread public consultation in early 2019 and completed by August. For more information, email IDSSP or visit the IDSSP website.

CensusAtSchool Project

The CensusAtSchool project team have been busy designing and piloting a questionnaire for the 2019 census which will go live in February 2019. **Chris Wild** and **Rachel Cunliffe** are Co-Directors of the Project and **Atakohu Middleton** writes press releases. **Anne Patel** is responsible for the teaching resources on the website. See: www.censusatschool.org.nz

2019 IASE Satellite Conference, Kuala Lumpur, Malaysia, 13-16 August. This conference is a precursor to the World Statistics Congress 2019, 18-23 August in Kuala Lumpur, Malaysia for which IASE has also organized about 10 Invited Paper Sessions. Stephanie is the Proceedings Editor for the Satellite conference as part of her role as Vice-President on the IASE Executive Committee. Proposed abstracts were due on 15 January 2019. See IASE website for further information: <http://iase-web.org/conference/satellite19>

The 11th International Research Forum on Statistical Reasoning, Thinking and Literacy will be held 14-20 July 2019 in Los Angeles, USA. Maxine is on the Scientific Programme Committee. The theme of the Forum is *New ways of interacting with data, context and chance in statistical modelling processes* (see <http://srtl.info>).



On NCEA we had our say

The Ministry of Education spent a large part of the year on its Education Conversation: Korero Matauranga. This included a site called NCEA Have your say. We did. Our response is on [CensusAtSchool](#)

Also in that link is the NZ Mathematical Society Education Committee submission, and our endorsement of it, which concludes like this:

The area (*Mathematics and Statistics*) is one of rapid change, new needs for future citizens and workers, new challenges, and new opportunities. Mathematical and statistical thinking are vital skills for the future.

We would like to see progress with NCEA as a major way of making the most of the opportunities here. We urge the Ministry to promote research, consultation, professional development, and other resources for this rapidly changing learning area.

The Ministry released its report on the conversation on 30 November. You'll find a 93 page report, and an 8 page summary, in [here](#)

Meetings with Ministry and Qualifications Authority staff

In August, a team of five of us met with the key (and mostly new) people involved with Mathematics and Statistics in the Ministry, and discussed possible actions for both them and ourselves. The team was **Chris Wild** and **Anna Fergusson** from Auckland, **Michelle Dalrymple** from Christchurch, and **Derek Smith** and **Mike Camden** from Wellington. In the afternoon we met with the key people involved with Mathematics and Statistics in NZQA.

We hope to continue the contacts with both groups. For the Ministry, the big issues include:

- the major review of NCEA
- the subsequent review of the Achievement Standards that define the statistical skills to be assessed
- updates and improvements to The NZ Curriculum, when these become possible, with work needed in probability
- the need for an updated literature review in statistical education, to follow the 2015 work by NZCER
- statistics in primary schools

For the Qualifications Authority, the big issues include:

- digital assessment, and the opportunities for innovation in what is learnt and assessed in statistics
- statistical soundness in both internal and external assessments

NZ Mathematical Society's Education Committee

These folk are impressed that some people (we're not sure who) brought the statistical part of Mathematics and Statistics in NZ up to date over the last few decades. They'd like to emulate this for the mathematical part, and rethink what students will need for work and life, in a changing world.

We've had an ongoing conversation with this group. We see:

- both committees advocating whenever we can for the health of Mathematics and Statistics
- the two committees supplying their

expertise to their respective sides of Mathematics and Statistics.

New Zealand ISLP poster competition.

Stats NZ has taken an initiative with this. Entrants for the New Zealand ISLP poster competition have been selected and are currently working on their posters.

This year, students who won Statistics Prizes in the Regional Science and Technology Fairs were invited to develop the statistical content of their posters further to produce a poster that meets the criteria for the ISLP poster competition.

Three groups of students are currently working on posters for the ISLP poster competition. They will receive advice and review from Digital Publishing Consultants at Stats NZ. Their poster topics include: *“Tradescantia vs natives”*, *“Who’s laughing now? Does age affect the way people recognise fake and real laughter?”*, and *“Who is the odd one out?”*.

Learners and teachers need datasets

We’ve been working on how to make strong NZ datasets accessible to teachers and learners. There are many datasets available on the web, but we’d like to see datasets that are meaningful to NZ students, and easily accessible to teachers. Your ideas and datasets are welcome!

Networks of expertise in Mathematics and Statistics, NZAMT, and regional mathematics associations

At the end of 2017, the Ministry called for tenders to set up ‘networks of expertise’ in the learning areas of the curriculum. We are very pleased to see that NZAMT and its regional mathematics associations have been awarded eight contracts to provide these networks across the country. We look forward to working with them over the next two years. A main function will be to enable teachers to support teachers.

We are very pleased that, from the committee, **Derek Smith** is the kaiarahi for the national network, and **Robyn Headifen** is the kaiarahi for the Auckland network.

We’re progressing the idea for a new electronic journal: DAMIT

We plan that Data And Modelling In Teaching will contain peer-reviewed lesson plans from NZ teachers.

International engagement continues

This includes:

- Links between ourselves and the ASA/NCTM committee in the USA. **Anna Fergusson** is currently working with the American Statistical Association on an upcoming publication featuring statistical modelling activities, in the roles of co-editor and graphics editor
- Involvement of members in the International Data Science in Schools Project: <http://www.idssp.org>
- **Chris Wild**’s keynote address at ICOTS10 in Kyoto: *“Through a glass darkly”*
- NZers (committee members **Rachel Passmore** and **Pip Arnold**) receiving two of the four ‘highly commendeds’ for their papers at ICOTS10
- Four presentations including a keynote and a public lecture by **Maxine Pfannkuch**, while on University of Tasmania Visiting Scholarship for three weeks
- Recognition of Maxine’s editorial work on SERJ at ICOTS10
- Anna’s workshops at JSM/MWM in Canada.

ASA/NCTM = American Statistical Association / National Council of Teachers of Mathematics

ICOTS = International Conference on the Teaching of Statistics

JSM/MWM = Joint Statistical Meetings / Meeting Within a Meeting of ASA/NCTM

The committee

There are 24 of us, we meet 4 times a year by Zoom (thanks to Otago and **Greg Trounson** there), and we look forward to 2 new teacher members joining us.

We wish you all a great year!

Local News

Statistics at ...

AgResearch Statistics Group

by HAROLD HENDERSON



The last 6 months at AgResearch have been busy with new arrivals, movements and phased retirements.

Poppy Miller joined the team in Grasslands in July. Poppy completed her BSc (1st class Hons) in Statistics at Massey University in 2014. Poppy is completing her PhD in Statistics and Epidemiology at Lancaster University (supervised by Peter Diggle and Chris Jewell). Her topic is statistical methods for modelling zoonotic diseases.

Shen Hea joined the team in Grasslands in October. Shen completed both his Bachelors in Veterinary science and Masters in Epidemiology at Massey University. After several years in various roles (including private practise, the government veterinary service, and as Epidemiologist at a contract research organisation), Shen returned to Massey University to extend his knowledge in statistics and completed a Graduate diploma in Applied Statistics.

Maryann Staincliffe at Ruakura is returning part time from February having given birth to a baby boy in August. And **Esther Meenken** at Lincoln had a baby girl in October.

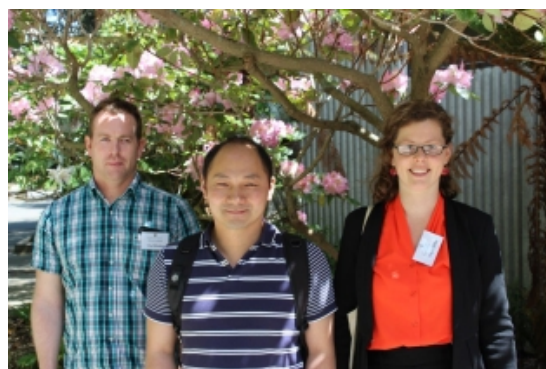
Paul Maclean has moved from bioinformatics in Lincoln to statistics in Grasslands, Palmerston North.

Catherine Cameron and **Martin Upsdell** at Ruakura have begun phased retirement.

Ten of the statisticians attended the NZSA

conference. **Vanessa Cave** was elected as NZSA President.

Nine of the statisticians attended the **Australasian Applied Statistics Conference** in Rotorua. Vanessa was one of the joint organisers.



Paul Maclean, Shen Hea and Poppy Miller



(L to R) Harold Henderson, Paul Maclean, Peter Green, Poppy Miller, Shen Hea, Martin Upsdell and Dongwen Luo at the 2018 NZSA conference



The Department of Biostatistics and Epidemiology (DoBE), headed by **Nick Garrett**, has been administratively relocated directly under the Faculty of Health and Environmental Sciences, in keeping with its mission to support all research staff and postgraduate students collaboratively. Simultaneously, DoBE has extended its support clinics to the rapidly growing AUT South campus; under DoBE's initiative, the support clinics have extended well beyond statistical and epidemiological support, and now include support for research with Māori and Pasifika participants, as well as support regarding applications for funding and for ethics approval.

The year 2018 has been marked by the graduation of the first DoBE PhD student, **Tariq Al-Shatanawi**, who successfully defended his thesis on "*The Association between Religiosity and Tobacco Use among Muslim Primary School Students in Irbid, Jordan*". DoBE's first MPhil students, **Christin Coomarasamy** and **Hannaneh Safardokht**, also graduated in 2018. DoBE members are currently primary or co-supervisors for 20 Doctoral and 4 Master's students.

DoBE also harbours the vital capacity and capability of a recently hired full-time Faculty Research Data Manager, **Ben Elliott**, who has already overseen the set-up of several research projects at AUT and at Counties Manukau Health, including research involving StatsNZ's Integrated Data Infrastructure. An Analytics intern, **Brice Valentin Kok Shun**, has also been actively supporting data management and monitoring of studies in Pasifika youth research and problem gambling, among others. Both have been involved in the successful implementation of REDCap as a research data capture and management platform, another DoBE initiative. The 6 full-time and 2 part-time members of the Department have co-authored 30 published papers and garnered over 800 citations in 2018, in fields as diverse as occupational therapy, respiratory medicine, endocrinology, family violence, geriatrics, neuroepidemiology, physical activity, nutrition or rheumatology.

Two new members, Dr **Melanie Moylan** and Dr **Takayoshi (Tak) Ikeda**, are joining the Department as Research Fellows in December 2018 and January 2019.



AUT Mathematical Sciences Symposium

On 22-23 November, the Mathematical Science Research Group (MSRG) hosts the 5th annual AUT Mathematical Sciences Symposium. Over 50 delegates attend the event, with 31 talks across all areas of the mathematical sciences, including statistical programming, statistical methodology, stochastic modelling, data science, computational and mathematical modelling, financial analytics, financial mathematics, decision analysis, and structural dynamics.



Farewell to Prof Jeffrey Hunter

Professor Jeffrey J. Hunter joined the School of Computer and Mathematical Sciences at AUT in 2007 on his retirement from Massey University. He has made important contributions to the School and more recently to the School of Engineering, Computer and Mathematical Sciences. In particular, he was instrumental in introducing the Analytics programme, first as an undergraduate major in the BMathSc and BSc degrees and more recently as the highly successful Master of Analytics. His research contributions have been significant with a large number of invited international conference presentations and talks at universities around the world. His research in the properties and computations involving Markov chains is internationally known. Furthermore, since 2007, he has been a member of the International Organising Committee for

the International Workshops on Matrices and Statistics. We are grateful for his mentorship of recent academic staff appointments in the Department of Mathematical Sciences and his role as the Director of the Mathematical Sciences Research Group. Professor Hunter will start his retirement from AUT in January 2019. We will miss his contributions but no doubt we will continue to see him involved in an ongoing role in his academic and research pursuits.



Travel and Conference Participation

Dr **Murray Black** attends the biennial International STEM Conference hosted by the Queensland University of Technology, 21-23 November 2018. It brings together a large range of lecturers from education and STEM disciplines throughout several universities.

Prof **Jeffrey Hunter** organized a Special Invited Session on "Applied Probability" at Linstat 2018: "The International Conference on Trends and Perspectives in Linear Statistical Inference" held on 20-24 August 2018 at Będlewo, Poland, the Mathematical Research and Conference Center of the Polish Academy of Sciences. Speakers included **Beatrice Meini** (Pisa, Italy), **Dario Bini** (Pisa, Italy), **Jungong Xue** (Fudan University, China) and **Konstantin Avrachenkov** (INRIA Sophia, France). In addition Jeff contributed a talk at the meeting on extending his research on Kemeny's constant to "*Kemeny's function for Markov chains and Markov renewal processes*".

Dr **Murray Jorgensen** has been exploring some of the applications of sufficiency in the statistical analysis of data sets too large for conventional analyses.

Dr **Sarah Marshall** delivered a contribution talk on “*Repair warranty modelling using an alternating geometric process*” at the Joint NZSA/ORSNZ Conference, 27-30 November 2018.

Dr **Nate Wichitaksorn** gave an invited talk titled “*Analyzing Multiple Vector Autoregressions through Matrix-variate Normal Distribution with Two Covariance Matrices*” at Time Series and Forecasting Symposium at University of Sydney Business School, 13-14 November 2018 and a seminar talk at Japanese Chamber of Commerce in Bangkok, Thailand on December 3, 2018.

Nicholson Consulting

by AMANDA HUGHES



We thought it might be a good idea to share some tales of industry in the newsletter.

For those of you who don't know us, Nicholson Consulting is a data science and analytics company. Nicholson Consulting has been operating for over 10 years and was founded by **Todd Nicholson** our Principal Data Scientist. We have now grown to a team of 9! We are mainly data scientists with backgrounds in a huge range of different areas including statistics, led by our General Manager, **Kylie Reiri**. For more information, please check out our website: <https://www.nicholsonconsulting.co.nz>. We are also active on [LinkedIn](#).

Recent projects:

In September 2018 a new system to assess ACC claims went live. The system is automated

and more than half of all ACC claims are now automatically accepted. Behind the scenes, models assess whether to accept a claim or send it to a person as well as categorise the claim. Nicholson Consulting built the underlying decision models and implemented these within the new system that was built in tandem. This was a large undertaking as ACC receives over 2 million claims every year. If you're interested in reading more about this, there is plenty of information on the ACC website ([see here](#)).

Since this project was completed, we are now moving on to more research and insight gathering for some of our clients. We are IDI users and also work with other groups in order to get our research implemented. We also have several interesting projects in the works so watch this space as we are able to share more about these.



Over 60 PFR staff gathered at Lincoln on September 5th and 6th to attend the Data Science Forum, themed “*Everyone a Data Scientist*”. The meeting started with a discussion on leadership from **Roger Robson-Williams** about creating a Data Science culture in PFR. Guest speaker **Kim Lung Chan** from Callaghan Institute described the Callaghan model of Data Science and opportunities for funding for students, research projects and businesses. We then had a series of rapid fire talks ranging over Data Management, Statistics, High Performance Computing and New Technologies. The second day ended with a discussion on “*How to Solve Our Data Pain Points*”. Many of the solutions revolved around building a strong and connected Data Science community that regularly engages in training; increasing the numbers of data literate staff; and the importance of metadata and consistency for understanding and sharing data. The level of buzz at the breaks and dinner at the Laboratory suggested that an engaged Data Science community is already beginning.

The end of the year is conference season. For the Australasian Applied Statistics conference in Rotorua, **Ruth Butler** was invited to organize a session on “*Statistical Consulting in the Real World*”. Both she and **Linley Jesson** gave talks as part of this session, and there was a lively discussion to end the session. **Peter Jaksons**

talked at the same conference about building data and analysis pipelines, and **Andrew McLachlan** made sure the slides worked. We also had several people attend the NZSA conference in Palmerston North; **Kate Richards** helped judge the student presentation prize, and **Duncan Hedderley** talked about analysing metabolomic data, while **Catherine McKenzie** is the webmaster.



Plant and Food delegates and friends at the Australasian Applied Statistics Conference. From left to right: Rodelyn Jaksons (University of Canterbury), Catherine McKenzie, Ruth Butler, Peter Jaksons, Mark Wohlers, Lindy Guo, Andrew McLachlan, and Rory Ellis (University of Canterbury)



David Harte was a Guest Professor at the Institute of Statistical Mathematics in Tokyo from mid September until mid November 2018. He was working with **Jiancang Zhuang** and **Yosi Ogata** on self exciting point process models (Hawkes processes), with particular interest to when some “linkages” between events are broken due to missing data.

The photo is in a Japanese pub after David’s seminar: “*Evaluation of Earthquake Stochastic Models Based on Their Real-Time Forecasts: A Case Study of Kaikoura 2016*”. The photo includes **Jiancang Zhuang**, **Yosi Ogata**, **Yicun Guo** (post-doc) and two PhD students.

The Institute of Statistical Mathematics moved from Minato-ku in central Tokyo to Tachikawa, in the western suburbs, at the beginning of 2010. The additional space allowed it to also build

the Akaike Guest House, named after Hirotugu Akaike (of the AIC), who was its director from 1986 until 1994.





What have we been up to?

Concern over quality of Māori Census data: Our researcher **Andrew Sporle** is among a group of indigenous scholars sounding the alarm over the quality of Māori data in this year's Census. More [here](#).

Meet Associate Professor **Simon Harris**, a new recruit in the Department of Statistics. Simon, from the United Kingdom, is a probabilist. His research focuses on branching processes, including branching Brownian motions. Find out more about what this means [here](#).

Associate Professor **Renate Meyer** has [won](#) a James Cook Research Fellowship in Physical Sciences for her work using complex statistical methods to separate gravitational-wave signal from background noise in astronomical observations. Her work helps us to better observe and understand some of the most mysterious aspects of our universe, such as the coalescence of black holes, or collision of neutron stars.



Renate Meyer



Simon Harris

Celebrating women's suffrage:

On September 19 1893, New Zealand became the first self-governing country to grant women the vote. To mark 125 years of women's suffrage and to honour our trailblazing female scientists, we renamed ourselves the Jean Miller Heyward Department of Statistics from September 17-25. Our fellow Faculty of Science schools and departments did the same, each temporarily taking the name of a remarkable female scientist. Born in 1921, **Jean Miller Heyward** attended Epsom Girls' Grammar and gained her MA in Mathematics from the University of New Zealand in 1942. She became a statistician, biometrician and a senior public servant. [More](#).



Jean Miller Heywood

Some successes to share:

- At the International Statistical Ecology Conference in Scotland, our students **Andrea Havron**, **Louise McMillan** and **Joey Wei Zhang** won prizes in the student presentation competition, Andrea with distinction.
- At the International Conference on Teaching Statistics in Japan, former PhD student Dr **Pip Arnold** and **Rachel Passmore**,

a current PhD student and Professional Teaching Fellow (PTF) in Mathematics, were highly commended for their papers; **Maxine Pfannkuch** was also recognised for her work building the Statistics Education Research Journal (SERJ).

- PhD student and PTF **Anna-Marie Fergusson** has been drawing a lot of attention from high-profile researchers in data science with her fantastic talks about involving first-year students.
- **James Russell** has been honoured with a distinguished service **award** from the Society for Conservation Biology for his outstanding contributions to biodiversity protection.
- PTF **Rhys Jones** has been conferred his PhD from Cardiff University.
- Associate Professor **Rachel Fewster**'s popular **Catch-IT** programme won the education category in the inaugural (Auckland Council) **Mayoral Conservation Awards**. Catch-IT is a community-based system to help everyday New Zealanders manage predator-control trap lines and share their results online.
- Associate Professor **Rachel Fewster** has won the New Zealand Statistical Association's **Campbell Award**, which recognises her sustained contribution to the promotion and development of statistics.
- Dr **Claudia Rivera-Rodriguez** has won the **Worsley Award**, also from the NZSA.
- Departmental teaching awards were given to **Ben Stevenson**, **Emma Wilson**, **Peter Mullins**, and **Thomas Lumley**.
- Dr **Beatrix Jones** has been elected to join the Board of the International Society of Bayesian Analysis.

- Dr **Rhys Jones** has been appointed the Director of the **Science Scholars** Programme, which aims to engage the brightest new science students from New Zealand and abroad in research and other activities as soon as they come to the University of Auckland. **Details**.

Where are they now? We equip students for interesting and well-paid work in a wide range of fields. Here are a few of our former students:

- Former PhD student **Jonathan Briggs**, now Lead Data Scientist at Inland Revenue Department.
- **Carmen Lim**, who did her MSc with us, graduating in 2012 with first-class honours. Carmen now lives in Australia, where she does fascinating work helping to reduce the burden of mental illness.
- **Philip Vlaskovsky** did all his postgraduate statistics qualifications with us, and is now a research associate in the Faculty of Health and Medical Sciences at the University of Western Australia.
- **Robert Harrison**, who did his bachelor and masters study with us, and is now the Senior Manager of Data Science and Strategy at Westpac Bank.



From left: Jonathan Briggs, Carmen Lim, Philip Vlaskovsky and Robert Harrison

(With thanks to Atakohu Middleton for allowing me to extensively plagiarise the last 3 department newsletters she wrote at the end of 2018!)



Varvara Vetrova was interviewed by the BBC about her AI research on “*Rapidly identifying pest species and biosecurity risks*”. This research is part of a three-year \$1 million project, funded by the MBIE, with Mannaki Whenua (Landcare Research) and University of Waikato colleagues. The interview is available from <https://www.bbc.co.uk/programmes/w3cswhdn>.



As part of the team led by NIWA Varvara was recently awarded an MBIE Endeavour research grant entitled “*Machine Learning approaches to downscale seasonal climate forecasts for New Zealand*”. The goal is to improve the spatial resolution of global climate models to the town and farm scale in NZ, using deep learning based models.

Congratulations to the PhD student **Rory Ellis** who was awarded the Best Statistics Presentation Prize at the NZ Mathematics and Statistics Postgraduate conference for his talk entitled “*Using Bayesian Growth Models to Predict Grape Yield*”.

Also congratulations to the two teams from the Masters of Applied Data Science programme who were awarded prizes for ‘Solution with Biggest Impact’ and ‘Best Presentation’ at the ‘**DATALAND NZ**’, Hackathon organised by Department of

Internal Affairs (DIA) in Wellington.



Dataland Participants

Two teams from the Masters of Applied Data Science also participated in the ActInSpace Challenge, on 25-26 May. This event is hosted by the Centre for Space Science Technology, in partnership with the MBIE, ChristchurchNZ and the French Embassy. The inaugural ActInSpace challenge was run by the European Space Agency, French Space Agency, and CNES and is run simultaneously across the world. This event focuses on applications of space data and targets university students and young entrepreneurs to come up with innovative applications, with the support of experienced industry mentors.



ActInSpace Challenge teams

University of Otago: Biostatistics Unit

by ANDREW GRAY



Since last time, we have had a visit from Professor **Stephen Walter** (from McMaster, Canada) who generously gave his time to talk about his research with the Biostatistics Unit, providing much appreciated inspiration to us in our own methods research, as well as presenting a seminar on “*Patient preferences in clinical trials*” based on work that he and Associate Professor **Robin Turner** have collaborated on. Robin and Dr **Ari Samaranayaka** have continued to deliver workshops on statistics to research staff and students across the University, including a

two-day workshop on introductory biostatistics (jointly presented with Dr **Nicole Mealing** from Sydney) which was extremely successful. Most of the Biostatistics Unit attended the Australasian Applied Statistics Conference in Rotorua where Robin and Dr **Claire Cameron** presented a seminar on “*Establishing the biostatistics unit*”, Ari presented some of his recent work on “*Modelling nodal metastases among oral cancer patients*”, and Dr **Jillian Haszard** presented her findings from “*Analysing compositional time-use data in paediatric populations*”.

University of Waikato

by CHAITANYA JOSHI



Paul Brown successfully defended his PhD thesis titled “*Computational Bayesian Inference Using Low Discrepancy Sequences*” in December. His research was jointly supervised by **Stephen Joe** and **Chaitanya Joshi**. Paul will also be joining us in January as a Senior Tutor.

Bob Durrant was a guest speaker at the AUT Mathematical Sciences Symposium held

in November. His talk was entitled “*Random Projections for Dimensionality Reduction*”.

The baton of the convenorship of the Statistics group was passed on to **Chaitanya Joshi** for 2019. The Statistics department (and now group) was ably led by **Lyn Hunt** since 2010. We thank Lyn for her contributions in this role for so many years.