



The New Zealand Statistical Association Newsletter

Number 87

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President's Welcome

by MATT PARRY



Kia ora koutou,

Have you registered for the UnConference? I only ask because as I sat down to write this column, I realised I hadn't. So don't delay—and once you're

signed up, you can get started planning your tartan outfit for the conference dinner! And did I mention that the UnConference is free to NZSA members?

There have been a number of goings on this year that I wanted to bring to your attention. First up is the Data and Statistics Bill (2021) that passed its second reading and is scheduled for further deliberation in Parliament in the last week of July. I worked with Thomas Lumley, Andrew Sporle and Ian Westbrooke on a written submission to the Governance and Administration Committee prior to the first reading. The submission was endorsed by the NZSA Executive and I am grateful that Thomas and Andrew were able to make an oral submission too. We were broadly supportive of the Bill—which was presented as a much needed update on the Statistics Act (1975)—but we suggested the creation of a technical advisory group and the office of a Data Ombudsman as important checks on the expanded role of the Government Statistician envisioned in the Bill.

Since the first reading, NZSA member and former Government Statistician, Len Cook, has expressed serious concerns about the proposed powers of the Government Statistician and about the threat certain allowed types of data collection will have to individual privacy. Len has written a special commentary for this newsletter that I encourage

all members of the NZSA to read. I would be very keen to hear your views on the issues as well.

A piece of legislation that has already been passed this year is the Incorporated Societies Act (2022). The Act affects the NZSA (we are an incorporated society as well as a registered charity) in a number of ways: we will need to revamp parts of our Constitution and retain certain (minimal) information about our members. Fortunately, we have a couple of years to make the necessary changes!

I think the Incorporated Societies Act also gives us the opportunity to think about refreshing other aspects of the work of the NZSA. It has been very helpful talking to other scientific associations and also to The Royal Society Te Apārangi about the implications of Te Tiriti o Waitangi for national societies/associations. For us, I think it starts by reflecting on what our stated aim “the encouragement of theoretical and applied statistics in New Zealand” can more fully mean. Executive committee members Linley Jesson and Richard Penny are taking the lead developing these ideas, but I would love to hear from you too.

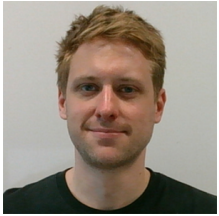
Unfortunately, I am running out of room so I will have to save some things for next time, but let me say how great it is to see this edition of the newsletter coming out. I am very grateful that Ben Stevenson has been able to take on the role of Newsletter Editor.

I look forward to seeing many of you in Auckland, November 22–23 for the UnConference!

Noho ora mai,
Matt

Editorial

by BEN STEVENSON



Kia ora koutou,

Hello and welcome to the latest NZSA Newsletter issue—our first in quite some time! I’m your new editor, and I’ve thoroughly enjoyed putting this

publication together. It’s been wonderful to get to know so many of our contributors already. My thanks to everyone who submitted an item, and to previous editors Marie Fitch and Poppy Miller for showing me the ropes.

The eagle-eyed Harold Henderson and Catherine Cameron have done an amazing job of proofreading. Harold didn’t find any mistakes until the fifth page, which, I am quite proud to announce, is apparently some kind of new record for an NZSA Newsletter editor. Nevertheless, Harold found quite a number of genuine mistakes on page six and beyond, so I am resigned to the fact that my new record was simply down to a favourable draw from the geometric distribution.

This is a bumper issue, because we have eighteen months of news to catch up on. With the world opening back up, there are conferences to announce, lecture series to promote, and of course our usual round-up from local groups. We continue our regular column *Meet the NZSA Executive*, and in this issue we profile our two new Student and Early Career Representatives. To that end, as the newest *ex officio* member of the NZSA executive by virtue of acting as Newsletter Editor, I’d better introduce myself.

I’m a Senior Lecturer at the University of Auckland. In my research, I develop statistical methods to analyse data from wildlife surveys. With new technologies it’s easy to collect mountains of data at a low cost, but figuring out exactly what to do with it all is rather more challenging. How can we estimate how many frogs are in a swamp if we listen to them with

microphones? Or how many whales are in the sea if we fly drones overhead equipped with high-definition cameras? Or how many manta rays visit a holiday hot-spot using photos posted on Instagram by tourists? My recent work has sought to answer these questions.

In the teaching arena, I’ve recently been developing and delivering our Capstone: a course students typically take in their final semester, preparing them for their next steps in life. The key focus is on developing skills such as collaboration, teamwork, and communication—not skills I’m used to teaching, but our students really shine when we give them the chance!

When I’m not at work, you can usually find me at home out in the countryside in Glenbrook. My hobbies include cooking, baking, trying to brew beer, and spending time with pets. I’m quite fond of my flock of chickens; if you ever find yourself in a Zoom meeting with me while I’m at home, then you can expect to be interrupted by the beautiful singing of my head rooster Bennett—or possibly his adolescent son Clarence, who is just beginning to find his voice.

Look out for our next issue, planned for February 2023. Please feel free to send me an item whenever you have the sniff of a new scoop, no matter how big or small: reach out at newsletter@stats.org.nz. I’d also appreciate your commentary or idle thoughts on issues pertinent to our community. For example, is my capitalisation of “UnConference” in this newsletter correct? Or perhaps it’s “unConference”, or even “Unconference”? As far as I’m concerned, this is an unresolved matter, and it’s given me sleepless nights while preparing this issue. I welcome your comments.

Hei konā mai,

Ben

Upcoming Conferences and Lecture Series

NZSA UnConference 2022

by JAMES CURRAN



You have been asking, so I am happy to announce that we have a green light for the NZSA UnConference. The dates are booked: 22–23 November 2022. Our keynote speakers

will be Professors Richard Barker (University of Otago) and Elena Moltchanova (University of Canterbury).

The website is live at <https://unconference.nz>, where you can register and submit your talk titles, if you wish to present. We are also considering some lightening talk sessions, which have proved to be both enjoyable and extremely successful in other conferences. Talks will be held in the Maths and Physics Building at the University of Auckland.

The conference dinner will be informal and held again at Old Government House, with the theme

Terrifically Terrible Tartan. Under this theme, which is optional, you are encouraged to bring out your tartans in any shape or form, but preferably as hideous and outrageous as possible. There may even be a prize!

We do need you to register, and we will unfortunately have to cap numbers, because there is a limit to how many people can fit sensibly into Old Government House. This will be on a first come, first serve basis—do register sooner rather than later. We do ask you to treat this as a proper registration and not a registration of interest. Our budgeting depends on accurate information, hence this caution.

Registration is free for NZSA members, and as per previous years, we plan to give out a number of travel awards to student members who are presenting at the conference. Details are on the UnConference website.

Ihaka Lecture Series 2022

by PAUL MURRELL



In March 2017 the Department of Statistics at the University of Auckland launched an annual lecture series named after Associate Professor Ross Ihaka in honour of his contributions

to the field.

The 2022 Ihaka Lecture Series features three speakers who develop software tools for Data

Science, building systems that can be built upon in turn.

Presentations will take place via Zoom, with the speaker at a remote location. The presentations will be streamed live, and there will be the usual opportunity for Q&A with the speaker at the end of the session if you attend the Auckland location. Live streams are set up across the country.

Lecture 1: The genesis of experimentation

- 👤 Dr Emi Tanaka
- 📅 Senior Lecturer in Statistics, Monash University
- 📅 Thursday 28 July 2022

Lecture 2: New plumbing: Adding a pipe operator to base R

- 👤 Professor Luke Tierney
- 📅 Ralph E. Wareham Professor of Mathematical Sciences, University of Iowa
- 📅 Thursday 4 August 2022

Lecture 3: Perspectives on the last decade in data science tools

- 👤 Wes McKinney
- 📅 CTO and co-founder of Voltron Data
- 📅 Thursday 11 August 2022

Auckland:

- 📍 MLT2/303-102, Building 303, 38 Princes Street, University of Auckland
- ☕ Refreshments available from 6:00pm
- 🕒 Lectures begin at 6:30pm
- ✓ Register [here](#)

Christchurch:

- 📍 JE031, Jack Erskine Building, University of Canterbury
- ☕ No food or drink will be provided
- 🕒 Doors open from 6:00pm

Wellington:

- 📍 Room CO350, Third Floor, Cotton Building, Victoria University of Wellington
- ☕ Refreshments available from 6:00pm
- 🕒 Lectures begin at 6:30pm

AN ANNUAL SERIES CELEBRATING ROSS IHAKA'S CONTRIBUTION TO THE DEVELOPMENT OF R AND ITS LEADING ROLE IN STATISTICAL COMPUTING

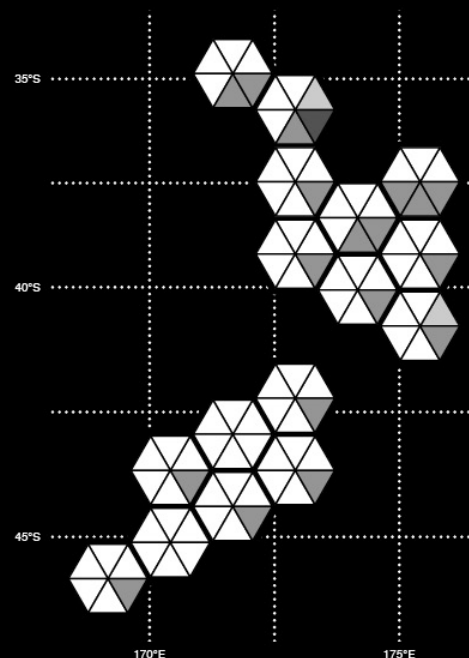
2022 IHAKA LECTURES

Building Building Blocks for Data Science

28 July, 4 and 11 August

Lectures commence at 6.30pm
MLT2/303-102, Building 303, 38 Princes Street
Refreshments will be available before each lecture at 6pm.

www.stats.auckland.ac.nz/ihaka-lectures



Save the Date! Joint IBS-AR/SEEM Conference 2023

by VANESSA CAVE



The joint conference of the Australasian Region of the International Biometric Society (IBS-AR) and Statistics in Ecology and Environmental Monitoring (SEEM) was to be held at the end of 2021, however given the global

uncertainties around COVID-19 it was postponed for two years to November 27th–1st December 2023 at the Copthorne Hotel and Resort, Bay of Islands, Waitangi, New Zealand. Please make a note of this in your diaries! For more information, contact James Curran (j.curran@auckland.ac.nz).

Australasian Applied Statistics Conference 2022

by VANESSA CAVE



You're invited to the Australasian Applied Statistics Conference (AASC2022) being held 28 November–2 December at the beautiful RACV Inverloch Resort, Victoria, Australia.

Registration and abstract submission are now open via the conference website: <https://aasc2022.netlify.app>.

This conference is 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 applied statistics. Invited speakers and workshop presenters include Di Cook, Petra Kuhnert, Francis Hui, Emlyn Williams, Emi Tanaka, Arthur Gilmour, Roger Payne, David Baird, and Vanessa Cave.

Key dates for AASC2022:

Abstract Submissions Closed:	31 August 2022
Authors' Notification:	22 September 2022
Early Bird Deadline:	30 September 2022
Registration Closes:	11 November 2022

We hope to see you there!



RACV Inverloch Resort, the AASC2022 conference venue.

Obituaries

David Ian Pool (1936–2022)

by LEN COOK AND TAHU KUKUTAI (WITH CONTRIBUTIONS FROM RICHARD BEDFORD AND NATALIE JACKSON)

This article first appeared on the Royal Society of New Zealand website



Without doubt, Emeritus Professor (David) Ian Pool was the founder of Aotearoa New Zealand demography. His decades of research on regional, national and international population dynamics established a deep knowledge base on the peopling of Aotearoa that has influenced generations of scholars, students, planners, and decision-makers. Ian went far beyond ‘doing one’s job’ to instil interest and curiosity among diverse audiences, a feat that extended well past the classroom, podium, or media interview.

Laying the foundations

Ian was born in Auckland and completed his undergraduate and graduate degrees in the 1950s at The University of New Zealand’s Auckland University College. He then took up a scholarship to undertake a PhD in demography at the Australian National University with the renowned demographer Mick Borrie. Ian’s thesis was the

first substantive analysis of Māori population change from the late eighteenth century using contemporary demographic techniques. His thesis was subsequently revised and published in 1977 by Auckland University Press and Oxford University Press. The Māori Population of New Zealand, 1769–1971 was the first of three books that Ian would eventually publish on the topic of Māori demography.

After completing his PhD, Ian headed further afield to take up roles at the University of Ghana (funded by the Population Council), the University of Western Ontario, the International Population Program at Cornell University, Carleton University, the University of Montreal (lecturing in French), and the World Fertility Survey in the United Kingdom. He was also an invited lecturer at universities in the UK, Europe, Asia and North America. Ian became widely regarded as an expert on African population dynamics, and on the relationships between population and development. From

the mid-1970s Ian's services and expertise were drawn on extensively by the United Nations Fund for Population Activities (UNFPA) and a range of other international agencies including the International Statistical Institute, the International Labour Organisation, USAID, the World Bank, and the UN's Economic and Social Commission for Asia and the Pacific (ESCAP). During these years Ian developed a strong interest in regional and global population dynamics and built an extensive network of contacts with leaders in the field of demography.

In 1978 Ian left a professorship at Carleton to return to Aotearoa to take up the chair of sociology and anthropology at the relatively new University of Waikato. He became the founder of the university's Population Studies Centre in 1982, and shortly after was made the inaugural professor of demography, a position he held until he retired in 2009.

Population and policy

Ian's research and contributions to public life informed a broad spectrum of public policy. During the 1980s he was a member of the New Zealand Planning Council's Population Monitoring Group and was a key contributor to the six reports that the group published between 1984 and 1991. This coincided with Ian's deepening involvement in research and national policy debates about population issues during a decade of major economic restructuring.

As the voice for Aotearoa demography on the global stage, Ian was the advisor to New Zealand's delegation to the first International Conference on Population and Development in Cairo. He was a member of the International Union for the Scientific Study of Population (IUSSP), the UNFPA, and the Comité International de Coopération dans les Recherches Nationales en Démographie (CICRED). Ian also provided research and technical assistance for UNFPA in Africa (the Gambia, Nigeria, Senegal, Burkina Faso, Zaire, Malawi, Ghana, Sub-Saharan Africa), the Pacific (Tonga, Fiji, New Caledonia, Vanuatu) and Asia (Bangladesh, China, Vietnam, Cambodia, Nepal). A fluent French speaker,

Ian's bilingual capabilities and deep interest in the demography of Indigenous peoples made him an excellent candidate for many international missions.

A lifetime of research

Ian is perhaps best known for his lifetime of work on Māori demography. *Te Iwi Māori: A New Zealand population past, present and future* remains the seminal historical demographic analyses of the Māori population. In 2015 he published his third and final instalment on Māori demography, *Colonization and development in New Zealand between 1769 and 1900: Seeds of Rangiataea*. It was a significant expansion of his earlier work, providing a rich case-study of how Imperial era contact and colonisation negatively affected naturally evolving demographic transitions and thwarted Māori development. In later years Ian also undertook research on iwi demography for the Crown Forestry Rental Trust and appeared as an expert witness before the Waitangi Tribunal.

In addition to his research on Māori population issues, Ian published on nearly every aspect of Aotearoa demography. One of his major contributions was assembling a two-volume ESCAP monograph *The population of New Zealand: Country monograph series*. Published in 1986, the monograph included contributions from virtually all of Aotearoa's population specialists at the time.

In the mid-1990s, Ian and a team of staff and postgraduate students undertook Aotearoa's first major survey of fertility and reproductive behaviour as part of an international series of surveys in European countries. *The New Zealand Women: Family, Education and Employment* provided an unprecedented evidence base for policy relating to reproductive health and family formation. Over the next decade it generated numerous PhD theses, monographs, and published papers. In 2007 Ian published *The New Zealand Family from 1840: A demographic history* with his former PSC colleague Professor Arunachalam Dharmalingam and his wife Dr Janet Sceats, a noted demographer in her own

right. Ian and Janet are two of only eight researchers to be awarded life membership by the Population Association of New Zealand.

Ian also made major contributions to our national understanding of ageing, and the critical distinction between structural and numerical ageing. The former relates to the changing age structure of populations, driven by fertility decline, while the latter refers to the absolute increase in the number of elderly, driven by increasing longevity. Ian was also among a group of scholars at the forefront of international scholarship on the so-called “second demographic transition”—the age structural transitions associated with changes in fertility and mortality as countries move from periods of rapid growth through natural increase, to slow and then declining natural increase. His research on age structural transitions led to two major edited collections of papers with international collaborators: *Population, resources and development: Riding the age-waves* and *Age-structural transitions: Challenges for development*. These books reflected on the demographic, social, economic and political dimensions of population ageing in a theoretical context that challenged much conventional wisdom on contemporary population change. Ian’s scholarship not only provided a window into our past and present but remains vital for public policy in Aotearoa as we undergo changes that will radically transform the population structures of most localities and communities.

In the last few years—and despite being very sick—Ian completed a substantial manuscript covering 200 years of Aotearoa’s demographic history. It brings together and extends all the threads of his earlier work into a comprehensive account of the peopling and development of Aotearoa—a story only he could tell.

Teacher and mentor

Ian was passionate about nurturing new generations of demography scholars and his students’ achievements were a great source of satisfaction and pride. Over the course of his career, he supervised more than 50 masters and

doctoral students, many of whom now hold senior roles in universities, government departments and the private sector across the world. Having lived and worked in west Africa, Ian was particularly committed to supporting demographic capacity in less developed countries. In the 1980s and 1990s the Population Studies Centre was home to many students from Africa and southern Asia. He was a generous and supportive teacher and mentor, and maintained close relationships with many of his students years after they graduated. When the New Zealand Population Review published a ‘festschrift’ issue in 2011 to honour Ian, his former students were among the 13 leading population experts that contributed papers. He continued to supervise students and provide guest lectures long after his retirement.

Ian took his critic and conscience role seriously. He was a scientist who was prepared to play a significant part in public life and was unafraid to point out shortcomings in policy and political decision-making. He regularly fronted for the media well before science communication was popular and encouraged his junior colleagues to do the same. Ian was a richly informed, compelling speaker who could speak with authority on all dimensions of population change. Over decades he gave hundreds of talks and keynotes for scholarly and policy audiences, politicians, industry leaders, community groups and Māori organisations. His talks often interspersed empirical analysis, and a sharp critique of current policies, with witty anecdotes and wry humour. A talk from Ian was never dull.

The significance of Ian’s work has been recognised through numerous awards, honours, and appointments. In 1994 he was made a Fellow of the Royal Society of New Zealand. A decade later he was awarded the Society’s James Cook Fellowship, and in 2009 he received the Te Rangi Hiroa Medal. The latter award was particularly special to Ian. He was a long-time admirer of the Ngāti Mutunga politician, doctor and scholar, and had cited Te Rangi Hiroa liberally in Te Iwi Maori.

Ian was a keen swimmer and treasured the time spent with family and friends at their bach in Hahei. A visit to the Pool-Sceats home was both a social and intellectual experience to cherish and

energise. For many, Ian will be remembered as a larger-than-life colleague and friend who lived and breathed demography. He was dedicated to his craft, and to undertaking research that he felt made a real difference. His dedication was surpassed only by the love and pride he had for his wife Janet, his children Felicity and Jonathan, and his four mokopuna. In many ways, Ian's love

for his family reflected his philosophy of what he thought population research could and should be—that in the end, what really mattered was people.

He aha te mea nui o te ao? He tangata, he tangata, he tangata.

What is the most important thing in the world? It is people!

Jonathan Lermitt

by GRANT READ

This article first appeared on the Operations Research Society of New Zealand website

Jonathan died peacefully on 14 July 2022.

Jonathan should be remembered as the original pioneer of operations research applications in the New Zealand electricity sector, not just in demand forecasting, but optimisation and market issues, publishing in NZOR on using network flow models (first in 1977 then again in 1990), and optimal pricing (1983).

Subsequently he worked at Transpower and collaborated with colleagues at Massey,

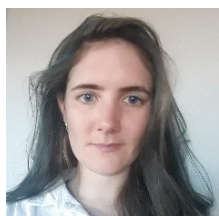
publishing extensively on topics related to biofuel developments. He was a friend, supervisor, and mentor to many who went on to establish national and international careers in the field of electricity sector optimisation and economics.

He also served the Operations Research Society of New Zealand long and well, as a Wellington Committee Member, National Council Member, Newsletter Editor, Vice-President, and President. Jonathan was also a member of NZSA from 1975 to 2017.

Conference Report

ISEC 2022: An Aotearoa satellite hub for an international conference

by CHARLOTTE JONES-TODD



The International Statistical Ecology Conference (ISEC) was held in Cape Town, South Africa at the end of June. ISEC is a biennial conference welcoming statistical ecologists and ecological statisticians alike. Last held as a virtual conference in 2020, this time around the decision was made to make it a hybrid event. As travel was still looking a little uncertain from an NZ viewpoint, the University of Auckland Ecological Statistics group decided to attend virtually. However, we decided we'd do something a little more collegial than half-heartedly watching talks whilst still carrying out a full day's work in the office. So, off to Raglan, we went!



The morning coffee crowd at Raglan Roast.

Plenaries included Olivier Gimenez, CNRS Montpellier, who regaled us with tales of hidden Markov models, and Beth Gardener, University of Washington, who covered a decade's worth of spatial capture recapture. We were also treated

to a fascinating, yet haunting, public session focused on conservation efforts and biodiversity in Africa. ISEC ran for five days including a total of forty-two streams with over four hundred contributed talks. Our Raglan regime (after coffee) involved watching the first session live, and then catching up with the second session the following day. Unfortunately, no amount of planning can avoid time zones! All talks were recorded and available live & on-demand, and luckily we tended to agree on the choice of stream.



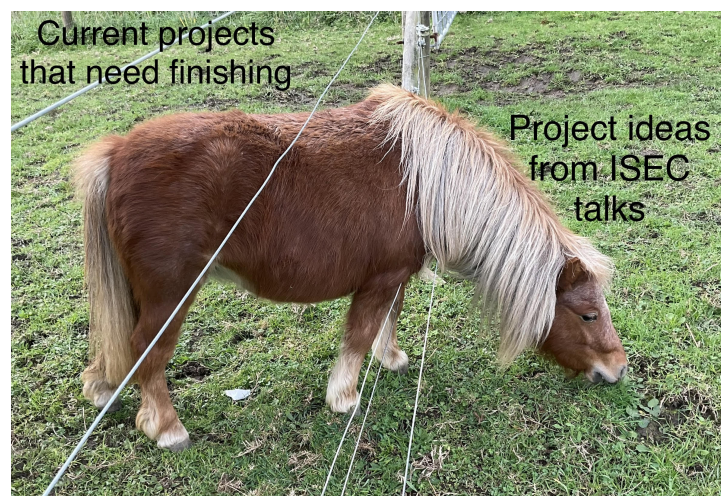
Our hub's conference dinner. Clockwise from the centre: Jing Liu, Russell Millar, Charlotte Jones-Todd, Ben Stevenson, Alec van Helsdingen, Rachel Fewster, David Gauld, Rishika Chopara, David Chan, and Rosemary Barraclough.

The conference was set up so that virtual attendees uploaded a recording the previous week, which was played out at the allocated time. We were then linked in live to answer questions. A few hiccups were inevitable, but Ben Stevenson and Rachel Fewster Zoom bombing a

round table discussion on integrated population models, not once, not twice, but three times, was apparently the highlight of that meeting! We also had academic success from Rishika Chopara who won the student poster competition—her title alone *Score tests: better than sliced bread* deserved the top spot—and from David Chan, who was runner-up in the student presentation competition with his talk *Acoustic spatial capture-recapture animal density estimates*. Additionally, I took home the hotly contested #statsmeme winner’s trophy, unashamedly using a picture of my Shetland pony to garner votes.

I foresee hybrid conferences becoming the norm; domestic hubs offer a carbon-friendly alternative to international travel and have many accessibility benefits. People who wouldn’t have otherwise been able to attend due to lack of funding, for example, would more likely be able to join in. In addition, hubs help foster collegiality

and collaboration. Personally, I would like to see institutions support such ventures as they currently do for international conference travel. In order to get a “conference experience” from a virtual setting, we need to leave our offices!



My winning ISEC #statsmeme: Shetland pony Norna eating the neighbour’s grass

Stories of Interest

NZSA Awards

by MATTHEW SCHOFIELD



In 2021 we had two award winners: Charlotte Jones-Todd and Russell Millar. Their citations appear below.

Nominations are currently open for the 2022 awards, and should be sent to Matthew Schofield, Convenor of the NZSA Awards Committee, by email (matthew.schofield@otago.ac.nz). The closing date for nominations in 2022 is Friday 30 September.

This year we have a new award. The Jean Thompson Award recognises excellence in the application of statistics in New Zealand industry, including business, Crown Research Institutes, government agencies and departments, and the media. The award celebrates the insightful use of statistical thinking and practice in solving practical problems and creating value. Further details are available on the NZSA website ([link here](#)).

Worsley Award

The Worsley Research Award recognises 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, or their highest completed degree.

Charlotte Jones-Todd, University of Auckland

Increasing amounts of spatio-temporally indexed data are available from different disciplines ranging from disaster resourcing to species distribution. Charlotte develops point process models that incorporate stochastic structures to better inform the complex temporal and spatial evolution of these data.



Charlotte with her Jack Russell Terrier, Watson.

Littlejohn Award

The Littlejohn Award is the Association's premier research award, recognising excellence based on publications during the five calendar years preceding the date of the award.

Russell Millar, University of Auckland

Russell's work has had worldwide impact on the way that fishing gear is constructed and deployed so as to minimise bycatch, improve fish welfare, and reduce environmental impact. His theoretical contributions underpin numerous methodological advancements in quantitative ecology, marine conservation, and resource management.



Meet the NZSA Executive

by BEN STEVENSON

Each newsletter, member(s) of the current NZSA executive 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?

In this issue, we meet our two new Student and Early Career Representatives, Rory Ellis and Jie Kang.

Jie Kang

Last year I took up the role of Student and Early Career Statisticians Representative. I am completing my PhD in quantitative genetics at the University of Otago and working as the genetic evaluation specialist at Beef and Lamb New Zealand.

Outside of work I enjoy playing saxophone with my band (called 'Gingernuts') and practicing mixed martial arts.



Rory Ellis

I am currently one of the joint NZSA Student and Early Career representatives with Jie Kang, undertaking this role since 2021. Prior to this, I was the S&ECS rep for Christchurch for several years.

Having started my PhD at the University of Canterbury in 2017, I (eventually) completed this in 2021. At the same time, my professional career as a statistician began in August 2020, where I moved up to Palmerston North to join the Research Statistics team at Fonterra. I have thoroughly enjoyed consulting with researchers in a wide array of scientific areas, assisting from designing trials, through to analysing and reporting insights on data. With Fonterra being a large organization, I enjoy coordinating with the numerous analytical teams, to learn all the different ways that we can interact with data.

Outside of work, I am typically a home-body, although I do enjoy going out to play sports and go to the gym. However, having recently welcomed my first child into the world, this has taken up most of my attention!



Is Parliament quietly watering down the independence of the Government Statistician?

by LEN COOK



Former Government Statistician, Len Cook, raises fundamental questions about the Data and Statistics Bill presented to Parliament by the Minister of Statistics

This note summarises the content of my two submissions to the Select Committee reporting on the Data and Statistics Bill, and of a personal letter to the Attorney-General.

Without notice by all but a scarce few, the independence of the Government Statistician and the transparency of government data sharing and use in New Zealand could change after this year. The Minister of Statistics has managed to avoid the public scrutiny of the constitutional

implications of this Bill despite transparency in such change being a proper expectation of citizens in a democratic society.

The Data and Statistics Bill presented to Parliament by the Minister of Statistics David Clark waters down the role of the Government Statistician through the simple means of enabling the role to be delegated to unspecified persons or organisations without any further legislative oversight or qualification. That there are serious risks from giving to others the special powers of the Government Statistician is obscured by weak and generally irrelevant arguments given for the Bill by the Minister of Statistics.

In effect, the Data and Statistics Bill uses the role and authority of the Government Statistician

to provide an umbrella for extended data sharing across the entire range of government agencies, and unspecified non-government entities. Longstanding obligations to protect confidentiality appear to have been watered down. The Bill has been presented to Parliament by the Minister of Statistics as a modernising, “future-proofing” change which will improve all aspects of trust. There are improvements needed now in research access and responsiveness to Māori, but these do not require opening up the authority and powers of the Government Statistician in this way. Nowhere else in the world have changes of this sort been made, or in this manner. To do so without a specific consultative process with Māori is surprising in 2022.

Data and Statistics Bill—Assumptions not tested

The arguments for the Bill do not acknowledge that administrative records have limits in their use for informing those policy areas that have been found to be weak. This is because the administrative records of government departments provide data about current policies and practice, from the perspective of government administration. Those countries that have the most reliance on administrative records for official statistics generally have wide ranging administrative registers for addresses and personal details. Such registers require continued compliance by citizens with registration processes that are rarely seen or accepted in Westminster systems.

The Data and Statistics Bill is to be put in place without the strong legislative oversight and regulation of data sharing and data linkage across government that is in place in other countries, such as the Australian Data Availability and Transparency Act 2022, or the United Kingdom Digital Economy Act 2017.

The arguments of the Minister for the Bill are

- *“The 1975 Act makes no reference to data at all.”*
- *“It lacks the flexibility to respond to the changes in data and digital that we are seeing.”*

- *“... but this Act was written before personal computers were widespread, before social media, before the cultural changes that technology continues to drive.”*
- *“It does not provide the kinds of tools we need to boost the supply and quality of administrative data—so, this is data that’s collected for other purposes, often: for registrations, service delivery, transactions, recordkeeping.”*
- *“... it modernises the framework for accessing data and research.”*
- *“... and supports Stats New Zealand to become a data-first agency, an administrative data-first agency.”*

The arguments presented by the Minister in speeches are hardly compelling, and I regard their selection as insulting to the public by their frivolousness and generality.

Data and Statistics Bill—Constitutional implications not transparent

It is the independence of the Government Statistician in the guardianship of confidential information provided to government only for statistical use that underpins trust in official statistics. Official statistics bring confidence in how we measure progress or lack of on economic, environmental and social concerns, reporting regardless of the political predisposition of Ministers of the day. Citizens, business, international organisations and ratings agencies are all stakeholders who depend on this trust.

After enactment, the Data and Statistics Bill will bring the Government Statistician into the fold of the policy, enforcement and operational agencies of government through permitting data sharing on an unspecified scale. This would make unavoidable a reversal in the long-standing constitutional checks on involvement by the Government Statistician in policy advocacy or justifying the operational delivery of policies. They are briefly referred to in the report of the Select Committee. In providing others with the powers of the Government Statistician, as statistical clones, concerns of the public legitimacy of statistical functions critical to trust

in government may lead to a loss of trust we need to have in the role.

The Data and Statistics Bill permits the delegation to other persons and agencies of the powers that have been unique to Statistics New Zealand and the Government Statistician for some 110 years. Bodies that could receive such a delegation exist because of purposes that must at some time conflict with the statistician's impartiality, protection of confidentiality and privacy whenever their role involves policy, service delivery, advocacy, enforcement or surveillance. It is near impossible for any organisation with other functions to either meet or be perceived to meet obligations of impartiality. No policy, service or compliance organisation that I am aware of has maintained without question a consistent reputation for being responsible, scientific and transparent, for as long as the Government Statistician has.

Data and Statistics Bill—Propagating clones of the Government Statistician

To apply properly the legislative authority for legitimising clones that could publish trustworthy statistics with the duty of care required of the Government Statistician would necessitate having expertise that is not an essential requirement or condition of appointment to other positions, and which would be rarely met. The Data and Statistics Bill will also water down the obligations on the Government Statistician to guarantee to protect the confidentiality of statistical responses, a reduced duty of care which the Minister has not yet drawn attention to.

The Bill risks weakening public trust more

generally by ignoring the separation of roles of agencies involved in service delivery, enforcement or statistics. This establishes the opportunity for agencies to obtain confidential personal information beyond that needed for the functioning of their statutory roles.

Only last week the Prime Minister wisely commented about trust in government being “something that can be built up over decades but torn down in mere years.” The Minister of Statistics might take heed of his own leader.

Contributed by Len Cook, former NZ Government Statistician and UK National Statistician

Len Cook was Government Statistician of New Zealand from 1992 to 2000. He was the National Statistician of the United Kingdom and Registrar-General of England and Wales from 2000–2005. He remains active in the use and analysis of official statistics.

- Vice President of the International Statistics Institute (2005–2009), Fellow of the Royal Statistical Society, life member of the NZ Statistical Association, the Institute of Public Administration, NZ Population Association and Companion of the Royal Society.
- Participation in the official statistical systems of the European Union and the Pacific region.
- Experience in policy applications of statistics spanned the Task Force on Tax Reform (1981), Royal Commission on Social Policy (1987–88), through to Superu Board Chair and Families Commissioner (2015–2018).

Updates

Student and Early Career Statisticians' Network

by JIE KANG AND RORY ELLIS



In the last six months, we've been busy recruiting our local representatives of NZSA SECS. Please join me to welcome Devendra Oak, Anna Redmond, and Louise McMillan. Biographies of our local representatives are below. Please do not hesitate to get in touch with your region's representative [here](#).

Looking ahead, we are planning to host our first joint student and early career seminar series between SSA and NZSA. Meanwhile, we're working on building a new platform to help our student and early career members to get connected. Please stay tuned for more updates.

Auckland: Devendra Oak



I graduated in Computer Science Engineering in 2009 after which I did consulting with Capgemini for nearly 5 years. Working on a business process optimisation project for a retail client in Finland, I realized the potential of

analytics. I came to New Zealand for my Masters in Analytics with AUT. During my studies, I took part in MINZ as well as NZSA events. I found them to be particularly useful for networking. I finished my Masters in 2016. Later I worked in number of optimisation and operations research roles with Fonterra, Air New Zealand, Auckland



District Health Board and EnviroNZ. During this time, I worked on a broad spectrum of business areas including people analytics, stock projection, product mix optimisation, demand forecasting, revenue optimisation and business performance.

Currently I am working with Qrious as a Senior Data Consultant. After working closely in business on optimisation roles, my current role is more towards data engineering and visualisation. As Auckland representative, I am looking forward to building a good young statisticians' network, where we can collaborate and learn from each other! Feel free to email me at oak.devendra@gmail.com.

Otago: Anna Redmond



Hi, I'm Anna, and I'm the Otago representative. I completed my BSc majoring in Mathematics and Statistics and minoring in Computer Science at the University of Otago in 2018. I then decided to continue with statistics for my honours and now PhD study at Otago. Long before I

learnt about statistics, I often found myself looking at spatial patterns and trying to make sense of them, so I probably shouldn't be surprised I am now doing that more formally using spatial statistics. My research is focused on the spatial distribution of different types of muscle fibres, with an aim to describe changes related to age or disease, in order to better understand the biological drivers of these phenomena.

Wellington: Louise McMillan



I completed a Bachelors degree and Masters in Mathematics at Cambridge University in 2006, avoiding statistics as much as humanly possible. I then worked for five years as a technical consultant, working on a very wide

range of projects for industries including oil and gas, space, defence and medtech, and during this time I discovered the delights of Bayesian statistics, which won me over to statistics in general. I then decided to study for a Masters

in Statistics, and simultaneously to emigrate from the UK, choosing New Zealand for a more easygoing life and easy access to large areas of wilderness.

In the end, the Masters in Statistics led to a PhD, both at the University of Auckland, and during the PhD I also had the opportunity to do some lecturing. Since it turns out I enjoy research, and teaching, and also consulting (which I'm still doing via the UoA Statistical Consulting Centre), I'm planning to stay in academia. I completed my PhD in 2019 and have been a Lecturer in Computational Statistics at Victoria University of Wellington since March 2020. My research is primarily on animal population genetics methodology and model-based clustering.

R Users' Groups

by SHIRLY WU

In the past 12-18 months, the R Users' Groups have organised a number of meetings which focused on the use of R Shiny and the use of R for COVID-19 related reporting.

Dr Uli Muellner, Director at Epi-interactive, presented a talk on R Shiny dashboards in production at the Auckland R Users group. Dr Muellner talked about what it takes to make your R Shiny dashboards ready for production, from stakeholder engagement and design considerations to data pipelines, hosting and performance tuning. He demonstrated a few examples of the R Shiny projects Epi-interactive has worked on such as the NZ COVID-19 health intelligence dashboards.

At the Wellington R Users Group, Paul McBride from the Health Quality & Safety Commission presented a talk on developing a forecasting model for hospitals in the time of COVID. He shared the challenges and his journey in learning to code in Shiny and using the open source Prophet forecasting tool. Jing Liao

from the Department of Corrections presented a talk on using R for COVID-19 vaccination reporting in prisons. He presented the setup of a weekly reporting system to track the progress of COVID-19 vaccinations. The vaccination reporting is the first health output using R, assisting staff in the regional offices to follow up on the vaccination status for people in prisons.

Looking for presenters!

We are constantly looking for presenters for talks and interesting R or statistics related topics to share with the R community. Please contact your local R user group organisers if you are keen to present!

- Auckland R Users' Group meetup page: <https://www.meetup.com/Auckland-R-Users-Group-AKLRUG/>
- Wellington R Users' Group meetup page: <https://www.meetup.com/Wellington-R-Users-Group-WRUG/>

NZSA Mentoring Program

by LISA THOMASEN



For years, NZSA members have discussed the benefits and possibilities of mentoring amongst our members. I'm excited to share that the NZSA Mentoring Program is now live!

The program was launched in March 2022 via a webinar attended by over 60 NZSA members. Participants expressed interest in being involved by completing a short survey. Responses were used to match the 14 mentor/mentee pairs with pairings being communicated to participants throughout the month of April.

At the start of June, meet and greet sessions were held for both the mentors and mentees. These

sessions provided an opportunity for participants to get to know others in the program. Some tips and advice for getting the most out of mentoring were also shared in these sessions which generated some good discussion.

The first cohort of the mentoring program is running from May–October 2022. Future cohorts of the mentoring program will be offered in 2023 and beyond with the goal of cementing mentoring and its benefits as part of the culture of the NZSA.

For more information about the mentoring program or to share ideas or express interest in being involved, please get in touch!

lisa.thomassen@outlook.com



Statistics Education Teams

Statistics Education Research

by MAXINE PFANNKUCH



People in Statistics Education Research

Congratulations to Anne Patel for her successful completion of her PhD thesis, *Statistical modelling: An enquiry into novice students' co-creation of reasoning and practice*, <https://hdl.handle.net/2292/58778>. After many years teaching in secondary schools and seven years as a part-time PhD student, Anne was appointed this year as a Professional Teaching Fellow in the Statistics Department at the University of Auckland, an appointment that she is thoroughly enjoying. Amy Renelle will submit her PhD thesis, *Triangulating concept knowledge flexibility in the area of randomness misconceptions: A critical investigation of teachers' randomness misconceptions, opinions of the concept of randomness, and use of multisensory learning* at the end of July 2022. Anna Fergusson is working to a December deadline to submit her PhD, *Design principles for tasks that introduce code driven tools for statistical modelling*. Congratulations to Anna and Chris Wild for the best paper award from the Teaching Statistics journal for their 2021 paper, *On traversing the data landscape: Introducing APIs to data-science students*. Two other PhD students in statistics education, Rachel Passmore and Malia Puloka, have completed data collection and are now in the analysis phase of their research.

After co-authoring the ASA 2021 publication GAISE II (Graded Assessment and Instruction

in Statistics Education K-12), Pip Arnold has been busy writing papers and doing workshop presentations on the document with other authors of GAISE. Her handbook for Years 1 to 11 teachers on the teaching of statistics, *Statistical investigations Te Tūhuratanga Tauanga*, to be published by NZCER press, will be launched at the NZAMT conference in New Plymouth in October. Judging by the feedback Pip has received from teachers already, the handbook will be an invaluable resource for teachers. Congratulations to Pip for being elected as an International Association for Statistical Education (IASE) Vice-President, continuing the tradition of New Zealand's involvement in IASE. As part of her IASE appointment, Pip has been running monthly online statistics education research webinars (see <https://iase-web.org/Webinars.php>).

Stephanie Budgett has two research projects underway at the undergraduate level with some colleagues. One project is investigating statistical literacy knowledge and retention across the typical applied statistics pathway in the Statistics Department, while the second is investigating how an interactive visualisation tool may support students' understanding of Markov processes in a first-year probability course.

CensusAtSchool Project

With Chris Wild retiring at the end of June 2022, Anne Patel will replace him as Co-Director of CensusAtSchool Project with Rachel Cunliffe. Pip Arnold is providing new teaching resources for the website, see <https://new.censusatschool.org.nz/>

Teacher Professional Development

Statistics Teachers' Day

The Department of Statistics, University of Auckland, and the Auckland Mathematics Association (AMA) organised and ran a very successful online Statistics Teachers' Day in November 2021, with teachers registering from across New Zealand. Because of Covid, it was decided not to approach teachers to offer workshops, rather Pip, Anne, and Anna each took a main theme of the Year 11 curriculum, namely sample-to-population inference, probability modelling, and prediction. They developed three-hour workshops in conjunction with a group of teachers. Simon Harris, University of Auckland, gave a keynote talk *Trees, branching and random walks*, while the keynote talk of Michael Shadbolt, Bethlehem College, Tauranga, *Last period relief with Mr Shadbolt*, engaged the audience with fun statistical class activities. To view these talks and workshops see <https://new.censusatschool.org.nz/resource/statistics-teachers-day-2021/>.

AMA Saturday morning workshops

The AMA has continued with its online Saturday Morning workshops, resulting in teachers from across New Zealand registering. In the first workshop in May this year Pip gave a presentation. See <https://www.aucklandmaths.org.nz/amaonline22-may-28/>.

University of Georgia

At the invitation of Chris Franklin (ASA K-12 ambassador) Pip Arnold and Anna Fergusson were online guest presenters for a University of Georgia, USA, statistics teachers course. Based on the GAISE publication, Pip gave a 3-hour presentation along with Sheri Johnson and Leticia

Perez, USA, and in another 3-hour presentation Anna involved the students in her data science activities.

Statistics Education Conference Involvement

The OZCOTS Conference was held online in July 2021. Stephanie was the Conference Proceedings Editor along with Ayse Bilgin, Australia. Amy gave a presentation. See https://iase-web.org/documents/ANZCOTS/OZCOTS_2021_Proceedings.pdf?1637055230.

The IASE Satellite Conference was held online in September 2021. Anna was on the International Programme Committee taking responsibility for the online technology. Her expertise and service on the committee was recognised with an IASE award. Malia and Amy presented their work. See https://iase-web.org/Conference_Proceedings.php?p=2021_Statistics_Education_in_the_Era_of_Data_Science

The Herenga Delta Conference: 13th Southern Hemisphere Conference on the Teaching and Learning of Undergraduate Mathematics and Statistics was hosted online in Auckland in November 2021. Rachel and Stephanie were on the organising committee, with Stephanie also being the Proceedings Editor with Rosie Cameron. Rachel and Amy gave presentations of their work. See <https://ir.canterbury.ac.nz/handle/10092/103438>

The 12th Statistical Reasoning, Thinking, and Literacy Forum took place online in January 2022 where Anna presented her work. A special issue in a journal will be the outcome from this forum.

ICOTS-11 will be held as a hybrid conference, online and in Rosario, Argentina in September 2022. Unfortunately the conference dates clash with NZ teaching time, so many New Zealanders will be presenting their papers online. Anne, Rachel, Stephanie, Amy, and Pip have submitted papers.

Statistics Education Committee

by MIKE CAMDEN



2022: A refreshing year

We're in Curriculum Refresh time for the entire school curriculum for Aotearoa New Zealand. Last year the Ministry of Education released the curriculum documents for Aotearoa New Zealand Histories. The way 'the learning that matters' is set out in there, as Understand–Know–Do, sets the pattern for our and other learning areas. See <https://aotearoahistories.education.govt.nz/>.

Our area, Mathematics and Statistics, is having its turn this year. The Ministry has set up a team of nine writers, and we are very pleased that our new committee member, Marina McFarland, is one of them. We've sent the Ministry two statements. We gather that the writing is progressing, and that a draft for public consultation will come out about September. We expanded on our views in two Zoom meetings.

Also, the Ministry has groups working on the review of NCEA. Last year the new NCEA Level 1 Achievement Standards emerged, with inputs from us. This year Level 2 is progressing, and Level 3 will come later. The 'Subject Expert Groups' include some very competent statistical educators, most of whom just happen to be committee members.

Late last year, the Ministry announced that it was considering a third subject at NCEA Level 3. The three subjects would be Mathematics, Statistics, and Applied Mathematics. The Ministry hosted a productive meeting about the third subject for themselves, the NZ Maths Society Education Committee, NZ Association of Mathematics teachers (NZAMT), and ourselves. The three subject groups agreed that the working

title Applied Mathematics would have to go. We also agreed that the third subject could be a great opportunity to attract a set of students back into our subject area.

What we said on all of that is in two statements. The first is our vision statement as sent in Dec 2021 to the Ministry and stakeholders: *A vision for statistics and data science education at the senior secondary level in Aotearoa New Zealand*. This is on CensusAtSchool ([link here](#)). Note that the first half addresses the last two years of school, but:

- Appendix A addresses the big curriculum issues,
- Appendix B summarises our statement on NCEA Level 2 and 3 subjects,
- Appendix C contains references relevant to all years, and
- Appendix D contains NZ collaborations relevant to all years.

The second statement specifically addresses the curriculum *Curriculum Refresh and Statistics—specific changes* ([link here](#)).

We've also published our ideas on vocational pathways: Vocational Pathways and Stats (censusatschool.org.nz). In a year of refreshes, we see chances to improve the statistics learning by ākonga on a non-University path.

We'd like to state our huge thanks to a small number of our members who crafted these responses often under tough time and confidentiality constraints.

We're also interested in the new *Literacy and Numeracy Assessment Standards* ([link here](#)) and *Strategies for Literacy and Mathematics & Statistics, and for Te Reo Matatini and Pāngarau* ([link here](#)).

About the end of June, the first iteration of the numeracy test took place in the trial schools. We note that, quite rightly, two of the seven 'content ideas' in the test are *Statistics and Data* and *Elements of Chance*.

We welcome comments from members on all

these opportunities, and our inputs into them.

Members come and go

This year we welcomed new members: Marina McFarland (Auckland Girls' Grammar, University of Auckland), Amy Renelle (University of Auckland), and Cami Sawyer (Ministry of Education). We've farewelled Marion Steele, Liz Sneddon, and Barbara Costelloe (who is acting Principal at her college). We thank them for their insights.

We've discussed how to meet our continuing aim, to have a group that represents the wider statistics community. We'd like to enhance the spread by geography and background.

We welcomed Sharleen Forbes to some meetings. She is involved in some of the big developments as above, and has very useful outsider insights. She helped to found the committee in 1987.

NZAMT 17 will be on 11-13 October 2022, in New Plymouth

The conference was postponed for a year. NZSA is supporting two statistical keynote speakers: Chris Wild, and Michelle Dalrymple.

Was 2021 a prime year?

We asked that in the last newsletter. The answer is: nearly. Try 43×47 .

In Maths and Stats education, the Ministry commissioned the Royal Society expert panel for Advice on Maths and Stats. Its report came out in September: *Pāngarau Mathematics and Tauanga Statistics in Aotearoa New Zealand* ([link here](#)) We're very grateful to Jennifer Brown and Michelle Dalrymple for making sure the statistical side was addressed as it needed to be.

Also, the Ministry sought more detailed input

from three Maths Education academics ([link here](#)).

Further details about 2021 are in the annual report.

Pip Arnold's Beeby Award book, *Statistical Investigations: Te Tūhuratanga Tauanga*

Pip's book is due to launch at the NZAMT 17 conference in October. We think it will be extremely valuable as a resource for teachers. People who have read it are extremely impressed with the breadth of statistical education issues, obvious ones and less obvious ones like: ethical issues, cleaning, editing, imputation, etc. We hope teachers get their teeth into this book.

Here's a sample from Vision Appendix A above, on the big curriculum issues

Statistics is important because there is a "fundamental human need to be able to learn about how our world operates using data, all the while acknowledging sources and levels of uncertainty." Statistical methods are used in almost all knowledge areas and are increasingly used by businesses, governments, health practitioners, other professionals, and individuals to make better predictions and decisions.

Conclusions and advice based on statistical methods abound in the media. Some of the thinking used for decision-making based on quantitative data carries over into decision-making involving uncertainty in daily life even when quantitative data are not available.

Local News

Foodstuffs

by MAZEN KASSIS



For as long as I can remember, I've had a consciousness about the value of data. To me, gravitating towards fields like computer science and biostatistics at university seemed preordained. Having spent my early career working as a biostatistician in the public health domain, observing early on how data, when used properly, can positively and meaningfully impact people's lives and I have been addicted to this "power of data" ever since.

At Foodstuffs North Island, one of the New Zealand co-operatives who operate PAK'nSAVE, New World, Four Square and Gilmours brands, we're on a mission to help New Zealanders get more out of life by becoming one of the most customer-driven grocery retailers in the world. This means putting customers at the centre of every decision made across our organisation. Integral to this mission is trust, for only if our customers trust us will they continue engaging with us in a way that would give us a chance at success on this mission. This goes for our employees, contractors, and suppliers, too. It was in this spirit that we observed Privacy Week in 2022 (May 9–15); it was our second year marking the event.

How did we mark Privacy Week?

The idea was that, for each of the first four days (9–13 May), we would disseminate examples taken from real-world scenarios that occurred at Foodies (what we endearingly call ourselves) over the last year, including relevant sections of the Privacy Act 2020 and practical tips to think about dealing with the scenarios.

The week's activities culminated in a Q&A session, which was a virtual, open forum in which anyone

from Foodies was welcome to join. One of the intentions of the scenarios was to get people thinking before the Q&A session, and come prepared with questions that we'd do our best to respond to.

What were some learnings?

- The more relevant and real-world applicable the privacy scenarios are, the higher the level of general engagement.
- Simplicity in message trumps completeness.
- Planning and then bringing to life meaningful content takes time (at least 3 weeks in this case).
- Sponsorship, promotion and/or involvement from senior stakeholders helps boost image and profile of content and events.
- Approach to content and attitude responding to questions can make or break things, so aim to keep things friendly and make people feel safe that they could ask virtually anything, across a variety of engagement channels.

As a statistician, it's fair to say over the years I've spent a substantial amount of time focusing on model development and picking the "best" model to provide insights into a particular problem, while spending relatively less time concerned about what happens next, after model selection and deployment. One thing I've come to appreciate more fully is that trust is critical. It isn't built only on what you do/say, but also how you do it/say it. Treating data (particularly, the specific type of data known as personal information) from its collection, use, storage, and deletion, in a manner that befits its preciousness helps keep quality data flowing and the decisions/actions that follow to be more data-driven and customer-focussed.

Plant & Food Research

by DUNCAN HEDDERLEY



Since the last newsletter, Rodelyn Jaksons and Ruth Butler have left PFR; Rodelyn to the police, Ruth to self-employment (trading as StatsWork). We have been joined by Tom Moore, who completed his PhD at the University of Waikato and is now based at our Lincoln site; Poppy Miller, who was at AgResearch in Palmerston North and is now at our Te Puke site; and Olivia Angelin-Bonnet, who was at Massey University.

Several of our people (Linley Jesson, Catherine McKenzie, Poppy Miller, Olivia Angelin-Bonnet)

attended Bruce Weir's statistical genetics workshop at Massey University in May. The workshop was 2+ years in the making and it was lovely to meet so many up-and-coming statistical geneticists (as well as Bruce) in person.

Our Data Applications group has also gained several new people to work on the Digital Horticultural Systems programme: Stephen Bell from MARS Bioimaging in Christchurch; Jack Perkins from Perceptive in Auckland; and Chris van Houtte from GNS in Wellington. This programme aims to model an apple production system, from the trees to how the fruit stores once it has been picked.

AgResearch

by MARYANN STAINCLIFFE



Over the past few months, we have farewelled Vanessa Cave, welcomed Sarah Rosanowski and Chanatda Somchit to the team and Timothy Bilton has accepted a permanent role as statistician still based at Invermay.

Vanessa has left AgResearch to work full-time for VSNi, as well as doing some stats consultancy on the side. At VSNi, there are some very exciting new initiatives in the digital agriculture space that she is keen to get her teeth stuck into! In addition, she will be continuing to contribute to the development of Genstat and ASReml-R.

Sarah rejoined the team at AgResearch Grasslands as a senior statistician in January. She is a repeat offender, having been a research associate with the Immunoparasitology team based at Wallaceville and then the Hopkirk (Palmerston North) before leaving AgResearch to undertake

her PhD in veterinary epidemiology at Massey. Her PhD was followed by postings in the UK and Hong Kong, where she provided stats consultancy to the (horse) racing industry and veterinary clinicians.

Chanatda joined AgResearch in May as a statistician based in Hamilton coming to us from Scion, Rotorua, where her focus was providing high quality biometric and modeling support to research scientists in the areas of biosecurity, ecology and production forestry. Her PhD, from the University of Auckland, developed an alternative procedure for estimating parameter coefficients to the vector generalised additive model (VGAM) class. Chanatda undertook her PhD studies on a scholarship from Naresuan University, Thailand, where she worked as a lecturer following completion of her Master of Science in Applied Statistics at Chiangmai University, Thailand. Chanatda is a true Ninja with R and enjoys living in New Zealand.

Nicholson Consulting

by VINAY BENNY



Mānawatia a Matariki!

It has been a challenging year for Aotearoa with COVID-19 finally on our shores in full force; this Matariki has been an opportunity to reflect on our accomplishments and challenges of the past year, and to look forward to a new year full of new opportunities.

We've recently had a change at our helm—Bernadette Scanlon recently joined us in early 2022 as the new CEO at Nicholson Consulting. Bernie brings an impressive skillset and a long list of applicable professional experience to our organisation, and her leadership has brought renewed vigour to the team. You can read more about Bernie [here](#). We've also had other changes since 2021, both in location and staffing—we've had to move to a bigger space to accommodate our bright new talent.

Regarding our work, we're proud to announce that one of our long-running projects have been chosen for two awards so far in the past year! The [Ohi Data Explorer](#) tool was developed for the Vodafone Aotearoa Foundation. It intends to democratise data so that those working to support rangatahi in Aotearoa have access to data and evidence about the needs and aspirations

of their communities. This project was voted as the winner of the 2021 Open-Source NZ's People's Choice Award and IDC's 2022 Smart City Asia/Pacific award.

We are also working on a few exciting projects—our team is currently working with the Ministry of Transport to construct a robust population synthesis algorithm to feed into a national transport microsimulation model. This model will help shape New Zealand's transport system and allow answering a range of transport policy questions. We're also engaged at the Ministry of Social Development, constructing predictive models that enable targeting Employment Assistance programmes to individuals to whom it will be most useful. And we're working with a consortium of government agencies led by Stats NZ to construct a library of standardised definitions of indicators in the Integrated Data Infrastructure (IDI). This will ensure that all agencies use the same definitions while working on IDI research projects, and inexperienced users of the IDI will have ready-made code and access to experts to accelerate their research. Finally, in partnership with Kōtātā Insight, we have continued to look at te reo Māori revitalisation using a microsimulation. The simulation has been used to help answer investment questions to ensure that the language continues to thrive.

Fonterra

by LISA THOMASEN



There have been some big changes for the Fonterra stats team over the past year with Maree Luckman's retirement and Xin Zhou's move to a role at Pacific Edge Ltd in Dunedin.

Maree's garden is reaping the benefits of her

retirement and she is loving not being continually asked "how many samples do I need?"

Matt Schroder joined our team in July last year and has navigated the transition from his Masters at Massey Palmerston North to working life, in amongst the chaos of mask wearing and working from home. He has got stuck into

statistical consulting in all things milk powders and even found his previous experience working in a local café proved useful when it came to the experimental designs for tea tests (not to be confused with t-tests!).

What is the probability of two statisticians having baby boys within a fortnight of each other? Turns out this probability is higher than one might think! Both Rory Ellis and I have welcomed mini statisticians to our families this year. Em Rushworth has temporarily joined our team while I'm busy focusing on height and weight percentiles.

Matt, Rory and I all had the opportunity to attend an online R Shiny course offered by EPI-Interactive earlier this year. We're all looking forward to being able to apply these skills in upcoming projects. Matt and Rory were also able to attend an **R Exchange** event in Wellington in May. The event included a selection of speakers and an opportunity to network with fellow R users.

During the red traffic light setting, when most of our site was working from home, our workplace held a team meme competition with the purpose of creating memes that reflected our teams in a

light-hearted way. I created one for the stats team which received an honourable mention. Perhaps you'll also get a laugh out of it as you reflect on how statisticians are perceived!



Statistics Research Associates Ltd

by ROBERT DAVIES



Peter Thomson has stepped down as a director but is maintaining his research and consulting activities as part of the company. We have appointed Peter as a Distinguished Associate of Statistics Research Associates as a mark of our thanks and appreciation of his work since the company's inception in 1999, his exceptional research record, and his collegial help and advice to all.

David Harte is continuing to work with Mark Bebbington at Massey University, and others, on the MBIE funded Resilience to Nature's Challenges (RNC) project on Cascading Natural Hazards. The team were joined at the beginning

of June by Maryam Tagharobi who is starting PhD studies at Massey as part of this project.

Alistair Gray is working with the NRB on the third national panel survey of marine recreational fishers commissioned by Fisheries New Zealand. Although the survey design is carried over from previous surveys, COVID-19 and its unpredictable outbreaks are presenting challenges for face-to-face recruitment. He continues to provide statistical advice to various Government Departments and Agencies.

John Maindonald is working with John Braun on a revised version of their book on Statistical Analysis and Graphics using R. The new version has more material, additional co-authors and an updated title.

Robert Davies finally completed his part of a project with BECA on the effect on road improvements on crash rates for the Department of Transport in Victoria.

Finally, a sad note. Fraser Jackson died in October

last year. Fraser had been joining us for our Wednesday lunch meetings and had become part of the SRA family. Fraser had been in the Faculty of Commerce at Victoria University but was very much part of the statistical community. He was president of the NZSA during 1977–78.

Te Papa Atawhai, Department of Conservation

by IAN WESTBROOKE



Kia ora e te whānau,

In 2022, the Stats Team at Te Papa Atawhai has been “business not quite as usual” due to COVID, but nevertheless there is plenty to report!

In January, our principal statistician, Helene Thygesen, left New Zealand for the sunnier shores of England. Helene contributed widely to the improvement of the statistical methods at DOC over the past four years, including to models used for the annual reporting on vegetation and bird surveys. Helene has been greatly missed by her colleagues. Consequently, the job of Principal Statistician was advertised and is in the process of being filled (watch this space).

In February, Britta Basse joined Te Papa Atawhai on a 5-month secondment from Ara Institute of Canterbury where she is a Mathematics and

Statistics tutor. Her role at Te Papa Atawhai during this time has been to gain an insight into the statistical tools in use by DOC scientists and also to help Ian Westbrooke expand and deliver online training programs in statistics for DOC staff. Two 8-week Harvard edX courses “R Basics” and “R Visualisation” were supported and a third course “Statistical modelling in R” is currently underway.

Our monthly Stats Café continues to be popular with DOC staff. In April, Britta talked about Decision/Regression Trees in R. In May, Josh Kemp shared his analysis of data from the National Tracking Tunnel data base. In June, Jason Van De Wetering gave us a tour of Trail Camera data in the Greenstone Valley, Fiordland—with a particular emphasis on feral cat visits. In July we are planning to suss out PowerBI and its uses for some of our reporting work, either as a replacement or in conjunction with R.

Department of Mathematical Sciences, AUT

by PATRICIO MATURANA-RUSSEL



The department of Mathematical Sciences at AUT has moved at the beginning of 2022 to its new location in Level 9, WZ building, 6-24 St Paul Street, Auckland.

During the first semester it only partly ran in person, but it is expected to run all the statistical papers in person in Semester 2. Even though the modality in the previous semesters have been hybrid, the students of the

Master of Analytics programme have worked successfully in their industry projects, provided by important companies/institutions such as Fonterra, Mott McDonald, Water Care, ESR, Suez Smart Solutions, New Zealand Football, Auckland Council, among others, consequently being hired in some cases at the end of their projects.

Nate Wichitaksorn virtually attended the 5th International Conference on Econometrics and Statistics (EcoSta2022), which is a hybrid

conference held in Kyoto, Japan during June 4-6, 2022. He gave a talk on *Forecasting Half-Hourly Electricity Prices using a Mixed-Frequency VAR Framework: The Case of New Zealand Market*, which is joint work with Gaurav Kapoor and Wenjun Zhang and supported by a research grant from Callaghan Innovation. It's great to see many interesting talks and new research frontiers at the conference.

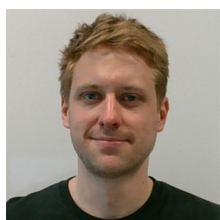
Murray Black has recently been appointed to the editorial board of the *STEME Journal* which is based in the CQU (Central University of Queensland, Australia).

Patricio Maturana-Russel participated during the first semester 2022 in the international

collaboration programme "Futures Pacific", implemented by AUT in New Zealand and Pontificia Universidad Católica de Valparaíso (PUCV) in Chile. The project, jointly led by him and Guillermo Cabrera-Guerrero (School of Computer Engineering, PUCV), included the participation of 4 students: Nicolle Ojeda Ortega (PUCV), Lucas Villavicencio Abarca (PUCV), Hannah Mae Wetzel (AUT), and Ander Castelltort Schnaas (AUT). The project aimed to study and develop machine learning techniques for the detection of gravitational waves caused by core-collapse supernovas. In addition, Patricio is participating in the three-year Marsden Fund Council Award project led by Professor Renate Meyer (UoA).

Department of Statistics, University of Auckland

by BEN STEVENSON



We've had a busy and exciting time over the last eighteen months.

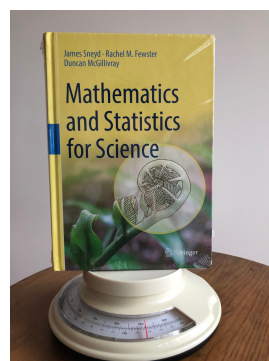
First of all, congratulations to Renate Meyer and Charlotte Jones-Todd, who

were successful in the 2021 Marsden Fund awards. Renate won a whopping \$3 000 000 Marsden Council Grant—the first of its kind to be awarded. She co-leads a large international, interdisciplinary team, including fellow department members Kate Lee and Matt Edwards, who will be investigating statistical challenges associated with detecting gravitational waves. Charlotte had her first taste of Marsden success, with her fast-start project on self-exciting point processes being funded to the tune of \$360 000.

Charlotte was swift to demonstrate that her prizes themselves follow a self-exciting process, by scooping the NZSA Worsley Award just a couple of weeks later. The Worsley award recognises outstanding published research from an early-career New Zealand statistician. Our department had further success in the 2021 NZSA awards: Russell Millar received the Littlejohn award for his work in fisheries.

The University Staffing Committee was clearly convinced by the prestige of Russell's Littlejohn Award, and he was quickly promoted to Professor early this year. Further congratulations to Associate Professor Beatrix Jones, and Senior Lecturers Kate Lee and Claudia Rivera-Rodriguez on their promotions.

Meanwhile, Rachel Fewster has been writing a book, along with University of Auckland co-authors James Sneyd and Duncan McGillivray. It's called *Mathematics and Statistics for Science*. The aim of the book is to supply maths and statistics concepts underlying scientific modelling, and it's designed to be highly accessible for non-specialists: the text is based on ideas and examples, and very gentle on mathematical detail.



The chapters on Probability and Statistics are in Parts 8 to 12, and cover material typically taught in first to second year undergraduate courses. Rachel allowed me to borrow a copy on the condition that I mentioned the book in this article. I can vouch that it's crammed full of material: it weighs in at almost 2.4 kg!

Our PhD students have also been busy:

- Drs Mugdha Chauhan, Chris Nottingham, Anne Patel, Oliver Stevenson, and Jason Wen all successfully passed their examinations.
- Luke Boyle and Amy Renelle wowed the judges at the 2021 Faculty of Science Three Minute Thesis competition: for the first time in recorded history, statisticians occupied the top two spots. Unfortunately Luke and Amy didn't win anything at the university-wide grand final, but they tell me they had a lot of fun, which is more important than prizes anyway.
- Our department scooped student awards in both categories at the 2022 International Statistical Ecology Conference: David Chan was runner-up in a field of 70 contestants in the student presentation competition, while Rishika Chopara won the student poster prize, beating out 34 other entries. That makes it back-to-back conference prizes for Rishika, who was highly commended for her talk at the UK's National Centre for Statistical Ecology 2021 Summer Meeting.
- We recently held our annual PhD Talks Day, where we heard about the latest and greatest research from 14 of our doctoral students. Further congratulations to Rishika Chopara, who won best talk, and to runner-up Agnes Yongshi Deng.

We've had a number of recent staffing changes. We owe congratulations to Arden Miller and

Patricia Metcalf on their retirements, and gratitude for their decades of service to our department. We also said goodbye to Rhys Jones, who is now a Professor and Associate Dean in the Faculty of Health and Medical Sciences at the University of Surrey, and to Earo Wang, who has returned to Australia. All the best to our former colleagues—please do stay in touch.

A warm welcome to Priya Parmar, who joins us from AUT as Senior Lecturer. Likewise, Senior Lecturer Chaitanya Joshi has recently arrived from the University of Waikato—which leaves a certain newsletter editor without a Hamilton-based correspondent (volunteers are welcome) and hoping that Chaitanya might be interested in resuming a similar role here in Auckland. Lars Thomsen also joins us as a Professional Teaching Fellow. To wrap up our personnel changes, current Professional Teaching Fellow Anna Fergusson successfully applied for a Lecturer role, and will be shifting into her new research position in January.

Finally, our plans to celebrate the end of 2022 with a departmental Christmas barbecue were scuppered by COVID-related lockdowns—so we held a celebration in February to welcome 2023 instead. Thanks to Russell Millar for hosting the barbecue, to Charlotte Jones-Todd and Joei Mudaliar for organising the event, and to James Curran for saving the day (as any good Head of Department should) with an emergency trip to the butcher when half of our supermarket order failed to materialise.

Massey University, Manawatū Campus

by JONATHAN GODFREY



This is a fairly short report. Life as a Stats group continues in Zoom fashion and sharing news of each other's lives has fallen victim to our ongoing home-based working lives.

During my most recent fortnight without a visit to my office, my desk phone disappeared. I accept that I wasn't using it, but it does seem strange to use my mobile to ring the colleague who would

normally be in the office next door.

The Statistics group on the Manawatu campus now (administratively) resides within the newly formed School of Mathematical and Computational Sciences. This brings staff teaching into statistics, mathematics, and computer science courses together and notably includes a presence on both campuses. Blending our teaching to cater for two internal student

cohorts and the distance students is the game most of us are now playing. For some of our courses, this means bringing our Albany colleagues into what was already a blended teaching approach for two of the three cohorts we collectively serve.

With the world opening up again, the stats group at Manawatu was fortunate to enjoy a visit by Murray Aitkin last month (end of May/early June), who gave a series of five seminars on the Manawatu campus. He talked about screening tests, bootstrap (failure), accounting for variability in double GLM, model comparison in finite mixture models and an excursion into

Gaussian likelihood.

Earlier, in May, Prof Bruce Weir (now Adj Prof at Massey) gave a week-long workshop on Advanced Statistical Genetics. This was co-organised with Plant & Food.

People do seem to be wondering when we'll re-engage with some of the activities we enjoyed before we all endured lockdowns. Maybe it's time we took a leaf out of Matthieu Vignes' book, who took up a one-month professorship in Marseille in mid-June to mid-July 2022. He says he is there to work on network methods for rare diseases, and in particular, to look at the potential to use transfer learning on multi-omics data sets.

University of Otago: The Biostatistics Centre on Dunedin Campus

by ANDREW GRAY



A lot has happened since the last newsletter! In November 2021, we had our official launch as the Biostatistics Centre, an extremely satisfying outcome that had been delayed by COVID. This resulted from years of work by Centre members, particularly by our Director, Professor Robin Turner. We were all thrilled by Robin's promotion to Professor, and we are looking forward to her inaugural professorial lecture. As if this wasn't enough, we also celebrated Claire Cameron's promotion to Research Associate Professor. Claire was also appointed to the University Senate and we are looking forward to her being a voice for biostatistics at that very high level.

In her spare time, Claire has been working in her role as the Centre's postgraduate coordinator, running events to connect the many research students supervised by members of the Centre, and joined the NZSA Mentoring Programme. We've continued our popular biostatistics workshops, including new workshops on longitudinal data analysis (led by Dr Jimmy Zeng from Preventive and Social Medicine) and survival analysis (led by Research Associate Professor James Stanley in Wellington). An

opportunity created by COVID was moving some of our regular workshops to Zoom, which has allowed us to offer these to researchers and research students from other campuses and organisations outside Dunedin.

While Dr Jill Haszard has been a biostatistician at the University for a while now, and has long-established connections with the Centre, we were delighted to have her join the Centre in April, bringing us up to six biostatisticians, twice the number we had when I started work here. Jill brings a wealth of expertise, especially in human nutrition and compositional data analysis, and in June this year she delivered what might have been our most popular biostatistics forum ever ("Biostatistics and nutrition: What do the numbers mean?"). If you ask her, she might even be able to share the video of the forum with you.

Jill and Claire organised the inaugural University of Otago Biostatistics Symposium in 2021, a fantastic event with biostatisticians, health researchers, and research students coming together from around the country to talk about their work, and with a great keynote speech from Robin about her experiences as a biostatistician.

We continued to publish articles on biostatistics in the New Zealand Medical Student Journal (<https://www.nzmsj.com/>), including

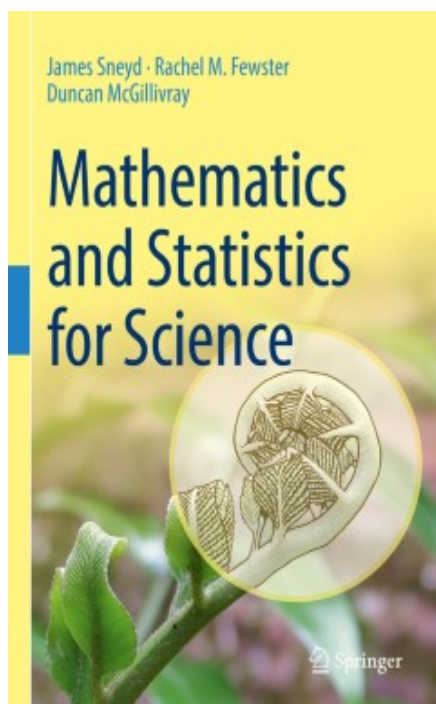
articles on p-values (led by Claire), sample size (led by Dr Ari Samaranayaka), confidence intervals (also led by Claire), and statistical software (led by myself).

As part of Aotearoa New Zealand's response to COVID, we were all very proud of Dr Ella Iosua for her work as part of the Strategic COVID-19 Public Health Advisory Group, including co-authoring a recent editorial in the New Zealand Medical Journal.

Alongside all of the triumphs, we were very sad

to see Joanna Flanagan leave her role as our administrator. Her support was so important to several of the achievements listed above. We also had to say goodbye to Elise Velenski who was our new administrator until recently, and who also contributed to these achievements. We miss seeing each of you on a daily basis!

There are many other things that could be listed here, but instead I'll suggest that you look at our Twitter page [@biostatsotago](#) to see the rest (and perhaps follow us at the same time)!



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James Sneyd, Rachel M. Fewster, Duncan McGillivray

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- Teaches mathematical and statistical methods from the point of view of practical scientific applications
- Illustrates concepts using real scientific data
- Introduces computational tools for pragmatic solutions to mathematical problems

Mathematics and statistics are the bedrock of modern science. No matter which branch of science you plan to work in, you simply cannot avoid quantitative approaches. And while you won't always need to know a great deal of theory, you will need to know how to apply mathematical and statistical methods in realistic scenarios. That is precisely what this book teaches. It covers the mathematical and statistical topics that are ubiquitous in early undergraduate courses, but does so in a way that is directly linked to science. Beginning with the use of units and functions, this book covers key topics such as complex numbers, vectors and matrices, differentiation (both single and multivariable), integration, elementary differential equations, probability, random variables, inference and linear regression. Each topic is illustrated with widely-used scientific equations (such as the ideal gas law or the Nernst equation) and real scientific data, often taken directly from recent scientific papers. The emphasis throughout is on practical solutions, including the use of computational tools (such as Wolfram Alpha or R), not theoretical development.

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