

## **Annual Report: Education Committee of NZ Statistical Association November 2019 to November 2020**

For AGM of Tue 24 Nov 2020.

Can the AGM please consider the magenta paragraphs at the end.

### **The pandemic and NZ statistical education**

We kept to our schedule of four Zoom meetings (with thanks to University of Otago and Greg Trounson there), but the big task for the year went on hold till about now. This task is the Ministry of Education's NCEA Review, and in particular the Review of Achievement Standards (RAS). During lockdowns, the Ministry put its resources into supporting online learning.

The RAS includes a rethink and replacement of all the 1000 or so NCEA Achievement Standards. Science and other subjects were piloted in 2019, then work stopped in 2020, but work on Mathematics and Statistics will restart very soon. The Ministry plans to draft Level 1 Achievement Standards and assessment tasks in 2021, pilot and revise them in 2022, and implement them in 2023. Levels 2 and 3 would get attention in following years.

The new proposed Literacy and Numeracy standards were released on 18 November for comment in the next few weeks.

We are pleased to have several of our members involved with the original RAS group for Mathematics and Statistics, the two Subject Expert Groups (SEGs) for it, and the SEG for Literacy and Numeracy. We intend to make our skills available to these groups, and to keep good communications going with the Ministry.

Teacher members and members in leading roles became even busier than usual during raised alert levels.

We posted a document of links on the modelling and statistics of COVID-19. It is on CensusAtSchool, in <https://new.censusatschool.org.nz/resources/> .

The pandemic has changed many things, including the many time series that describe life in New Zealand. These now contain some new challenges to statistical thinking!

### **Who we were in 2020**

Here are the 27 members as at the end of 2020. The first eight people formed the steering group for 2020, and we propose them as the steering group for 2021.

- Alasdair Noble (AgResearch) (convenor and link with NZSA Executive)
- Mike Camden (secretary)
- Anna Fergusson (University of Auckland)
- Chris Wild (University of Auckland)
- Mark Hooper (University of Canterbury) (meetings scribe)
- Maxine Pfannkuch (University of Auckland)
- Michelle Dalrymple (Cashmere High School)
- Pip Arnold (Karekare Education)
  
- Vanessa Cave (AgResearch) (NZSA president)
  
- Barbara Costelloe (Sacred Heart Girls College, New Plymouth)
- Christine Franklin (American Statistical Association and University of Georgia, USA)
- Dave Phillipps (Lincoln High School)
- Derek Smith (University of Otago, national kaiarahi)
- Emma Mawby (Ministry of Business, Innovation & Employment)

- Jeanette Chapman (Otago Girls' High School)
- Liz Sneddon (Saint Kentigern College)
- Marie Fitch (University of Auckland) (deputy chair)
- Marion Steel (Epsom Girls' Grammar School)
- Matthew Parry (University of Otago)
- Neil Marshall (NZ Qualifications Authority).
- Paul Gardner (Stats NZ)
- Rachel Passmore (University of Auckland)
- Rebecca Pollitt (Otago Girls' High School)
- Rhys Jones (University of Auckland)
- Robyn Headifen (University of Auckland, Auckland kaiarahi)
- Sashi Sharma (University of Waikato)
- Tilman Davies (University of Otago)

Here's the participation record:

Date	Attendees	Apologies	Total
12/02/20	14	7	21
06/05/20	14	5	19
05/08/20	12	10	22
04/11/20	11	6	17

### Good news about members

The Prime Minister's Science Teacher Prize was this year awarded to **Michelle Dalrymple**. This is the first year that the award went to a teacher of Mathematics and Statistics. The award recognises Michelle's multiple contributions to Mathematics and Statistics education, and the centrality of the learning area. Michelle is faculty head at Cashmere High School, Christchurch.

The award ceremony from 30/6/20 is here: <https://www.youtube.com/watch?v=hLe43P1Gbol>. At about 16 minutes, Juliet Gerrard introduces the Teacher Prize, and announces Michelle as the winner. After that, Michelle makes some strong statements about the values and satisfactions for her in the teaching of Mathematics and Statistics.

Two awards from the University of Auckland went this year to **Anna Fergusson**: the Margaret Goldstone Travel Award, and the Early Career Teaching Excellence Award.

### Our Priorities for 2020 saw progress

The Priorities were: the primary sector, the online journal, datasets, and curriculum. They led to the activities below.

NZQA has been investigating ways of **assessing mathematics and statistics for NCEA in a digital environment**. As a start on statistics, NZQA built three digital statistics activities for Achievement Standard 91586, *Apply probability distributions in solving problems*, a Level 3 externally assessed standard. The development team involved four of our members. The digital activities have been trialled in nearly 20 schools during term 3 2020. The report on the trial will be published on the NZQA website in the near future.

Anna Fergusson's new software tools are part of the trials. These tools and an introductory video are here: [https://www.stat.auckland.ac.nz/~fergusson/prob\\_dist\\_explorer/](https://www.stat.auckland.ac.nz/~fergusson/prob_dist_explorer/).

We have worked with NCEA to improve **the guidance documents for inference standards**, including Achievement Standard 91582 *Use statistical methods to make a formal inference*. The statements about sample and population will now be clearer for teachers.

Our new journal, **Statistics and Data Science Educator, SDSE**, <https://sdse.online/lessons.html> ,

was launched last year, with the publication of the first edition. Four more papers were published this year and more are on the way. We see professional development opportunities for teachers in writing and peer reviewing the papers. The committee congratulates Maxine Pfannkuch and Anna Fergusson, on getting the journal up and running.

In January, the regional kaiarahi of **the Networks of Expertise in Mathematics and Statistics** met in Wellington. Mike Camden discussed the committee's aims with them. He was impressed with their awareness of the importance of statistics education in the school curriculum and the widespread need for professional development in stats.

The next **NZAMT conference** takes place from 12 to 14 Oct 2021 in New Plymouth, and is a first for that location. NZSA is again supporting the statistical plenary speaker, and we are very pleased that the speaker will be Chris Wild.

The **International Data Science in Schools Project**, IDSSP, <http://www.idssp.org/>, is having a quieter year, thanks to the pandemic.

We now have a **country convenor** for the **International Statistical Literacy Project**. Mark Hooper has taken up this role.

Our USA member Christine Franklin has kept us updated with the progress of **GAISE II**, which is *Pre-K-12 Guidelines for Assessment and Instruction in Statistics Education II: A Framework for Statistics and Data Science Education*. It is to be published very soon, and possibly this month. The draft is at <https://ww2.amstat.org/misc/GAISEII-Draft.pdf>.

As the introduction says, 'GAISE II incorporates the new skills needed for making sense of data today while maintaining the spirit of GAISE I'. GAISE I (2005) was a fundamental statement of progressive principles for statistical education, and GAISE II updates it in the light of changes in data, technology, and pedagogy.

Christine co-chairs the writing team of seven, and our Pip Arnold is a member of this team.

In July, the government released the **Algorithm Charter for Aotearoa New Zealand**, which mentions data and statistical methods. Statistical literacy in future curricula needs to consider concepts like artificial intelligence and machine learning bias.

The **International Association for Statistical Education (IASE) 2020 Roundtable Conference** took place as a virtual conference on July 6-12, 2020. Chris Wild's keynote speech is <https://youtu.be/GKTQBHOckI4> (from minute 4 to minute 33). Stephanie Budgett was a discussant, and Pip Arnold is editing the proceedings.

The **iNZight** software is being polished to make it more appropriate for use in other parts of the Pacific.

Finally, we began our last meeting of the year with a visit from Andrew Sporle, who presented on **the Māori Data Sovereignty Network, Te Mana Raraunga**: <https://www.temanararaunga.maori.nz/>. We heard about indigenous data worldwide, the exciting growing data resources here, and the need for statistical education to produce statisticians who can work with this data.

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## We're looking forward to an engaging year in 2021

We'd like the AGM to endorse our proposed Steering Group for 2021. They are:

- Alasdair Noble (AgResearch) (convenor and link with NZSA Executive)
- Mike Camden (secretary)
- Anna Fergusson (University of Auckland)
- Chris Wild (University of Auckland)
- Mark Hooper (University of Canterbury) (meetings scribe)
- Maxine Pfannkuch (University of Auckland)
- Michelle Dalrymple (Cashmere High School)
- Pip Arnold (Karekare Education)

We'd like the AGM to consider and comment on our priorities and ongoing activities for 2021. They are:

Priorities:

1. Inputs into Review of Achievement Standards
2. Future of our school statistics curriculum.

Ongoing activities:

1. International collaboration with partners in the USA, UK, Australia, and elsewhere
2. Reviewing implementation of the statistics strand of the *NZ Curriculum*, with inclusion of assessment. [The operational side of Priority 2]
3. Establishing and progressing the New Zealand online statistics teaching journal: *Statistics and Data Science Educator (SDSE)* <https://sdse.online/>
4. Statistics education in the primary sector
5. Datasets for teaching, learning, and assessment.