Annual Report: Education Committee of NZ Statistical Association
November 2020 to November 2021
For AGM of 1 December 2021.

A year of alert levels and inputs

Our movements have been limited this year, especially for Auckland members, but we've had our four planned committee meetings by Zoom, and tsome further smaller meetings for specific issues. The Ministry of Education has resumed or continued with its reviews. Much of our energy has gone into making inputs to these, often in a hurry.

Again, we thank the University of Otago, and Greg Trounson there, for hosting the Zoom meetings.

Back in January, the **Royal Society Te Apārangi's Expert Advisory Panel on Mathematics and Statistics** got started. Among other things, it aimed to 'to inform the development of a high-level systems approach to supporting learning in mathematics ' (sic). We were very pleased to see Professor Jennifer Brown on the initial panel. We were very pleased again when our proposal for Dr Michelle Dalrymple to join the panel was actioned. We were able to make inputs to the Panel.

The Panel's *Pāngarau Mathematics and Tauanga Statistics in Aotearoa New Zealand: Advice on refreshing the English-medium Mathematics and Statistics learning area of the New Zealand Curriculum* was released in September. In it, the Panel thanks the New Zealand Statistical Association for 'valuable commentary on an earlier draft' of the report, and notes that the report was independently reviewed by four people, including our overseas member Christine Franklin (University of Georgia, USA, Emerita Statistics Faculty).

Do have a read; it is only 56 pages: Pangarau-Mathematics-and-Tauanga-Statistics-in-Aotearoa-New-Zealand-Digital.pdf (royalsociety.org.nz) . In particular, see Big Idea no. 7 on page 19: *Statistical inquiry is an interrogative cycle in which data-derived knowledge is created and critiqued.*

The report is wide-ranging, and sees the learning of Mathematics and Statistics as interacting with the whole of society in Aotearoa New Zealand.

We also had some involvement with the Ministry's **Expert Teacher Group** and **Maths and Stats Strategy Engagement days.**

A key part of the Ministry's work is in '**Strategies for Literacy and Mathematics & Statistics and Numeracy**'. The Strategies aim to address the problem of maths and stats learning not happening as well as it needs to, and the consultations above feed into these strategies. We sent a note on the relation of numeracy and statistics, and five of us met with the Ministry's strategies team in July.

The Ministry has piloted **the new Numeracy standard**, and the related materials: Numeracy | NCEA (education.govt.nz) . We made input to this in December 2020, and early 2021.

The Ministry's **review of NCEA Level 1** has advanced. At Level 1, we have one subject, *Mathematics and Statistics*. Like most subjects at Level 1, it consists of four five-credit achievement standards. The latest materials are here: NCEA Level 1 Development | NCEA (education.govt.nz) . A group from the committee made submissions.

We thank the committee members who worked hard and creatively in the Subject Expert Group for *Mathematics and Statistics.*

The Ministry's **review of NCEA Levels 2 and 3** has got to the stage of lists of subjects: NCEA subject lists for the New Zealand Curriculum levels 2 & 3, and Te Marautanga o Aotearoa Level 1, 2 & 3 subjects | NCEA (education.govt.nz). For Level 2, the Ministry proposed and settled on two subjects: *Mathematics*, and *Statistics*. For Level 3, it proposed three subjects: *Mathematics*, *Statistics* and the

third with initial title *Applied Mathematics*. It settled on two subjects: *Mathematics* and *Statistics,* for now; and is considering a third which will have a new name.

We sent in a submission, and three of us attended a meeting of people from the Ministry, NZAMT, and the NZ Maths Society Education Committee. We strongly supported the two subjects at Level 2, and the three at Level 3, and recommended a data science focus for the 3rd subject.

In October the Ministry progressed the **Curriculum Refresh**, by calling for nominations for writers. We responded with some carefully-framed nominations. Also, the committee nominated itself for the 'fast tester' role, and our offer has been accepted. The Curriculum Refresh will be a central concern for us over 2022 and 2023.

Rachel Passmore has been reporting to us from her position on the Ministry's **Pathways Advisory Group** .

The Ministry's newly announced timeline for NCEA Change Programme and Curriculum Refresh are here: https://www.beehive.govt.nz/release/schools-kura-and-early-learning-given-space-build-back-covid-19 .

International roles for members

The **GAISE II** document, from the American Statistical Association, was posted in December 2020:. [Guidelines for Assessment and Instruction in Statistics Education Reports.](). This is a leading statement for school statistical education in a rapidly changing world. The writing team included Chris Franklin (co-chair) and Pip Arnold.

Pip Arnold is now a vice-president on **the executive committee of the IASE**.

Rhys Jones, now in the faculty of health and medical sciences at the University of Surrey, is the **UK's Teaching Stats Trust Lecturer** for 2021/22. His is the fourth lecture in the series, and is entitled *Weapons of statistical instruction* www.teachingstatisticstrust.org.uk.

Anna Fergusson was on the international planning committee for the first online offering of the **IASE satellite conference** (30/8/21 to 4/9/21) as a 'tech wizard', and was subsequently given an award from the IASE in recognition of exceptional service to IASE and the statistical education community. Anna was also invited to be one of the opening speakers for the **USCOTS** (US Conference On Teaching Statistics, 28/6/21 to 1/7/21).

Neil Marshall played a part in [The Center for Curriculum Redesign](https://curriculumredesign.org) (CCR)' s ["Modern Mathematics" standards](), four years in the making.

Who we are in 2021

Here are the 23 members as at the end of 2021. The first eight people formed the steering group for 2021, and we propose them as the steering group for 2022.

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

- Matthew Parry (University of Otago, NZSA President)
- Vanessa Cave (AgResearch) (NZSA past 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)
- Liz Sneddon (Saint Kentigern College)
- Marie Fitch (University of Auckland) (deputy chair)
- Marion Steel (Epsom Girls' Grammar School)
- Neil Marshall (NZ Qualifications Authority).
- Rachel Passmore (University of Auckland)
- Rhys Jones (University of Surrey)
- Robyn Headifen (University of Auckland, Auckland kaiarahi)
- Sashi Sharma (University of Waikato)

Participation 2021

Date	Attendees	Apologies	Total
24/02/21	12	10	22
12/05/21	9	11	20
11/08/21	12	6	18
10/11/21	15	1	16

Further issues continue to be of interest

A result of Covid is **disrupted time series**. The analysis methods used in schools assume that past patterns have some stability, and for many New Zealand series, the assumption fails. Some members wrote a guidance document for teachers. This is on CensusAtSchool: Teaching time series in our covid-affected era.

Our third meeting included a visit from **Sharleen Forbes**, founding convenor of the committee from 1986. She has been working with NZQA, and outlined some issues of interest, including: falling student numbers taking maths and stats assessments, equity, statistics from different cultural perspectives, culturally appropriate ways of assessing, digital assessment (for which stats is ideal), and alternative forms of external assessment.

The **17th NZAMT conference** was planned for October this year in New Plymouth, with Chris Wild as the keynote statistical speaker. The organisers made the very difficult decision, with the help of a survey, to postpone it. The plan now is for the conference to be next year:
  National Mathematics and Statistics Conference, 11 - 13 October 2022, New Plymouth, Taranaki; *Reach your peak - Whāia te maunga teitei.*
  https://sites.google.com/nzamt.org.nz/conference

CensusAtSchool shows huge enhancements every year, and continues to contain great resources for teachers. See https://new.censusatschool.org.nz/live-dashboard/ We congratulate the CaS team for its successes.

We also keep up to date on these developments:
- the new features of **iNZight,** iNZight for Data Analysis
- The **International Data Science in Schools Project,** IDSSP, http://www.idssp.org/.
- Our journal, ***Statistics and Data Science Educator***, **SDSE**, https://sdse.online/lessons.html .

2022 brings major opportunities

We hope to continue input to **NCEA Levels 1, 2, and 3**, with the third subject at Level 3 being an interesting opportunity. Also, we plan to continue input to the **Curriculum Refresh**. We currently have a paper: *A vision for statistics and data science education at the senior secondary level in Aotearoa New Zealand* in preparation.

We're looking forward to an engaging year in 2022

These requests to the AGM come from the committee's Strategy document.

We'd like the AGM to endorse our proposed Steering Group for 2022. 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 (St Peter's Cambridge) (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 2022:

Priorities:
1. IInputs into Review of Achievement Standards, Curriculum Refresh, and any related opportunities
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.