The International Collaboration for Research on

STATISTICAL REASONING, THINKING AND LITERACY

SRTL

Preliminary Announcement

The Eleventh International Research Forum
on Statistical Reasoning, Thinking, and Literacy (SRTL-11)

14-20 July 2019

University of California at Los Angeles, USA

Location: UCLA Campus

Conference Theme:

New ways of interacting with data, context and chance in statistical modelling processes

SRTL

The International Collaboration for Research in Statistical Reasoning, Thinking, and Literacy (SRTL) was established in 1998 to cultivate a community of researchers and statistics educators who share the passion of studying the nature and development of students' statistical literacy, reasoning, and thinking, and exploring the challenges posed to educators and researchers at all levels in supporting students to achieve these goals. Today, SRTL offers scientific gatherings for statistics education researchers every two years.

The SRTL research forums have unique features, such as a small size (around 25 participants) that allows time for in-depth presentation and discussion of research. There is extensive use of videos to present how students solve problems and reason about statistical information in classrooms or during interviews. Forums include a statistician-in-residence in addition to the educational researchers in order to provide the perspective of the discipline and to give feedback on the research presented. Participants present, discuss and argue about research related to these topics in a format that facilitates becoming acquainted with key researchers and viewing their work in progress in a stimulating, positive and enriching environment. The SRTL research forums have led to many frontier publications that present new research, synthesise and build on previous research, and form connections among related work in other disciplines (Garfield & Ben-Zvi, 2015).

Statistical Modelling

Modelling is at the forefront of science and human activity. With the advent of data science, there are new opportunities for statistics education research to re-think what it means to model. Statistical modelling provides a way to bridge data, chance and context as a holistic approach to developing key statistical ideas. Technological innovations in simulations, visualisation and handling of complex data have enabled students new access to addressing complex problems, even from a young age. Beyond access to problems, the focus on purpose, shareability, and re-use of statistical models generates new opportunities for generalisation and invention of statistical tools and representations, with a focus on practices and processes. By focusing on modelling processes (rather than the model itself), the modeller becomes the

designer, drawing on a rich repertoire of experiences, mediated by technological tools, peers and their own explanations. These developments provide new stimulus for growth in the rethinking and study of the role of statistical modelling in helping students develop statistical reasoning and to interact with data, context, and chance.

SRTL-11

The SRTL-11 Forum will build on and expand the work discussed at previous SRTL gatherings and in particular the deliberations about statistical modelling in SRTL-9 and SRTL-10. Our previous work during the first SRTLs (1 to 4) has focused on reasoning about "big statistical ideas" such as data, variability, distribution (aggregate view of data) in the context of EDA. More recently, in SRTLs 5 to 8 we have introduced informal statistical inference, and studied it in the relation to the role of context, samples and sampling, and uncertainty.

Discussions at SRTL-9 and SRTL-10 made clear that we are just at the beginning of understanding the reasoning involved in statistical modelling processes. In keeping to the traditional SRTL focus on frontier research of learners' reasoning, thinking and literacy, we look for developments/contributions on the horizon of statistical modelling, such as: Theoretical insights into or frameworks for thinking about the modeller, learning statistical modelling processes, design of learning trajectories, learning environments and technologies for modelling, new forms of data and settings such as data science. Much more work needs to be done in the following areas.

Students' reasoning

- How do learners interact with, explain, structure, and negotiate messy, ill-structured problems and contexts to apply or invent modelling processes?
- How do students structure, slice, compare or manipulate data in statistical modelling to gain insight into the problem context?
- How do students tell the stories in the data through modelling processes?
- How do students model new forms of data (e.g., real world, simulated, images)?
- What connections to the context support students to create and reason with statistical models?
- What is the role of narrative (*meaning-making via the context*) in students' justification, argumentation and use of evidence in the process of statistical modelling?

Pedagogy

- How are learning environments designed to engage students in model invention, critique, evaluation (fit) and revision?
- How can new simulations and visualisations using technological tools increase students' access and agency for telling data stories and enrich conceptual understanding in modelling processes?
- What is teachers' reasoning with statistical models and modelling?
- How can we assess students' statistical modelling practices?

Theory

- What can statistics education research on statistical modelling contribute to data science education?
- How do we rethink statistical thinking in light of taking a modelling perspective?
- How do we rethink statistical thinking applied to data science?
- Is there a broad, simple articulation of statistical modelling that can be applied at multiple levels or across multiple contexts?

Call

Expression of interest to attend the conference can be submitted before **September 1, 2018** to **srtl2019@gmail.com**. Participation in the SRTL-11 Forum can be as a *presenter* or as a *discussant*.

Presenters are asked to send a brief letter of introduction of yourself and a two-page overview of work-in-progress relevant to the theme of the Forum, addressing: introduction, literature review and/or theoretical framework, methodology, expected results, and your practical and theoretical contribution to the theme. Note that presentations are on incomplete, rather than polished work and are aimed to provoke discussion about the theme.

Discussants are experienced SRTLers who will actively participate in all sessions and discussions and will have time to share their own reflections and comments in a panel on the concluding day. Discussants are asked to send a brief letter with a formal expression of interest.

Key preliminary dates:

- Sept 1, 2018: Expression of interest due
- October 2018: Response to Expression of Interest
- December 1, 2018: Extended abstracts due, if requested
- January 2019: Decision on acceptance
- May 1, 2019: Registration and preliminary paper for forum (front end of a full paper)
- July 14-20, 2019: SRTL-11 held

SRTL-11 Local Organising Chair:

Rob Gould (rgould@stat.ucla.edu) from the University of California at Los Angeles (UCLA).

SRTL-11 Location

UCLA Campus, Los Angeles, California USA.

References

Garfield, J., & Ben-Zvi, D. (2015). The International Collaboration for Research in Statistical Reasoning, Thinking, and Literacy (Foreword). In A. Zieffler & E. Fry (Eds.), *Reasoning about uncertainty: Learning and teaching informal inferential reasoning* (pp. XV-XVIII). Minneapolis, Minnesota: Catalyst Press.