

10th International Conference on Teaching Statistics
"Looking back, looking forward"
Kyoto, Japan, 8–13 July 2018 Website: icots.info/10



Welcome to the ICOTS10 Proceedings!

This year we celebrated the 10th ICOTS in Kyoto by *looking back, looking forward*. By looking back, we ground ourselves in the great work and ideas statistics educators have presented thus far, by looking forward we innovate and generate new ideas foreseeing a better statistical education for our students, educators, and society in general. It is with this spirit that ICOTS 10 presents over 350 contributions representing over 59 countries around the world.

Referee Process As in the last four previous ICOTS conferences, the double-blind referee process was optional for authors. There was a total of 144 papers submitted to go through the process, 97 were accepted as refereed papers (67.36%), a rate that is consistent with previous ICOTS. Each paper was reviewed by 2-3 referees using an online system where they assessed papers based on the level of their contribution to statistics education, relevance, adequate review of related work, technical, methodological and scholarly standard of work, and quality of writing. Referees also provided formative feedback to authors in the form of suggestions and/or concerns with the purpose of improving the manuscripts. The reports written by the 178 referees were extremely thoughtful and useful, and we owe to them the high quality of refereed papers presented at the conference. Their names are listed at the end of this page. Authors had a short window of time to improve their papers based on the suggestions, and what is presented in these Proceedings is the result of this process.

It has been such a pleasure to serve as a Lead Editor for ICOTS10. All contributions express the different experiences, contexts, and knowledge in which statistics is taught and learned around the world. These Proceedings are a true collection of intellectual and human effort to move us forward while grounded in our past.

Sincerely,

M. Alejandra Sorto Lead Editor, ICOTS10 Proceedings Texas State University, USA

Acknowledgements

We recognize the entire team of scholars that made this possible:

John Shanks (IPC, Information Manager) John is the person that holds the entire conference together. We recognize his incredible commitment to IASE by being the person that creates effective structures to make the work more effective. His ability to keep up with the fast pace of changes and unpredictable situations is just amazing. He programmed

an entire internal web platform to manage the refereeing process, and uploading of invited and contributed papers/posters. In addition, he created and managed the ICTOS10 webpage for participants to access the most current information. He was my eternal companion at every second, he gave me strength when I needed it the most, and solved endless problems that I thought had no solution. My most respectful appreciation to John – ¡Mil gracias!

Katie Makar (IPC, Chair) As my mentor, coach, and role model since we first met at ICOTS7, Katie guided and supported me through the entire process — from sharing her past wisdom from ICOTS9 as the Chief Editor, to helping make hard decisions when needed. She effectively and masterfully communicated with sessions organizers, local organizing committee, and the entire ICOTS community.

Alexander White and Layla Guyot, my co-editors and life savers at the most stressful times. Alex and Layla invested many hours at the end of the process making sure all the papers follow the ICOTS Guidelines. In addition, they worked hard at keeping up with many changes to the status of authors and presenters in the final hours.

Topic/Poster Convenors, Session Organizers, and the rest of IPC. They played a key role selecting and making decisions regarding the quality and diversity of the Conference Program. They worked hard contacting authors and presenters directly, keeping up with last minute changes in the program, and effectively communicating with the rest of the team.

Local Organizing Committee. Thank you for hosting ICOTS10 in beautiful Kyoto! We appreciate all the hard work and dedication to our organization and the IASE community to ensure attendees had the most wonderful experience.

Special thanks to Gail Burrill (IASE, President). All this effort and outcome is led by the incredible Gail Burrill. Talented in many aspects, but in particular at working with educators from different backgrounds and experiences with such energy and enthusiasm. She inspired me to do my very best by providing me with her example, trust, and support.

List of referees

José Antoino Orta Amaro Christina Andersson Pip Arnold Dana Balas Timar Giovanni A. Barbieri Lucia Barroso Marijka Batterham Dani Ben-Zvi Ayse Aysin Bilgin Murray Black Lonneke Boels Nancy Boynton Jennifer Brown Stephanie Budgett David Bulger Floyd Bullard Philipp Burckhardt Rosemary Callingham Carmen Capilla Cauan Cardoso José Carlos Carrión Pérez Carolina Carvalho Catherine Case Theodore Chadjipadelis Beth Chance Egan Chernoff Helen Chick Francesca Chies Julie Clark Shirley Coleman Jennifer Czocher Francisco De los Reyes Bruno de Sousa Guido del Pino Robert delMas Adri Dierdorp Kirsten Doehler Mine Dogucu Ksenija Dumicic

Bruce Dunham Andreas Eckert Joachim Engel Mahtash Esfandiari Antonio Estepa Atif Evren Sue Finch Kelly Findley William Finzer Noleine Fitzallen **Sharleen Forbes** Mike Forster Steven Foti **Karen Francois Daniel Frischemeier** Iddo Gal Mónika Galambosné Tiszberger Linda Gattuso Emanuele Giorgi **Els Goetghebeur Dulce Gomes** Ana Luisa Gomez **Emilse Gómez-Torres** Mary Gray Marcia Gumpertz Layla Guyot Saleha Habibullah John Harraway Rossi Hassad Elisa Henning Oscar Hernandez Nicholas Horton Lynette Hudiburgh Maryann Huey **Gizem Intepe** Ippo Ishibashi Shizue Izumi **Rhys Jones** Jennifer Kaplan **Dimitris Karlis** Takashi Kawakami Sibel Kazak John Kern II Anita Kolnhofer Derecskei Eirini Koutoumanou Saras Krishnan Gerald Kroisandt David Lane

Dean Langan Sophie Lee **Richard Lehrer** Larry Lesser Samuel Lopez Bello Zagorka Lozanov-Crvenkovic Knut Ole Lysoe Helen MacGillivray Justyna Majewska Martin Malaspina Stephen Mansour Laura Martignon Pilar Martin-Guzman José Martins Flavio Alexandre Massa Guimarães John McKenzie Ana Meireles Maria Meletiou-Mavrotheris Oded Meyer Jack Miller Megan Mocko Okewole Modupe Adam Molnar Carlos Monteiro Edward Mooney Maria M. Nascimento James Nicholson **Katrin Niglas** Per Nilsson Jennifer Noll Irena Ograjenšek Ailton Oliveira Júnior Chris Olsen José Antonio Orta Hiroki Otani Maria Gabriella Ottaviani Angela Paes Efi Paparistodemou Susan Peters Peter Petocz **Brian Phillips** Rebecca Pierce **Robyn Pierce** Susanne Podworny Alexev Ponomarenko Caterina Primi Theodosia Prodromou

Gina Reed **Enriqueta Reston** Jim Ridgway Blanca Ruiz Hernández Louise Ryan Milo Schield Achim Schiller Vuslat Şeker Ana Serrado-Bayes Sashi Sharma J Michael Shaughnessy Carl Sherwood Thomas Short **Heather Smith** Funmi Soetan M. Alejandra Sorto **Eric Sowey Roger Stern** James Stigler Pablo Straccia Sharon Strickland **Engin Sungur** Katalin Szép Nathan Taback Seiji Takat Liliana Tauber Nathan Tintle Maureen Townley-Jones Kimmo Vehkalahti Pieternella Verhoeven Sylvain Vermette Markus Vogel Angie Wade Amanda Walker Thomas Wassong Jane Watson **Travis Weiland Douglas Whitaker** Alexander White Chris Wild Leigh Williams Therese Wilson Zuhal Yilmaz **Berislav Zmuk**