



11th International Conference on Teaching Statistics

“Bridging the Gap: Empowering and Educating
Today’s Learners in Statistics”

Rosario, Argentina, 11–16 September 2022 Website: icots.info/11



Welcome to *Bridging the Gap: Empowering and Educating Today’s Learners in Statistics: Proceedings of the 11th International Conference on Teaching Statistics!*

ICOTS11 surely will be remembered for many firsts, among them: the first ICOTS held in hybrid form, the first ICOTS to be held in September, and the first ICOTS to have presentations in three different languages with proceedings that include papers written in three different languages. Even though there were many hurdles to overcome for ICOTS11 to occur, we came together as a community, both face-to-face and virtually, with representatives from 42 countries who share a common commitment to empower and educate today’s learners in statistics.

As was the case for the five ICOTS that preceded ICOTS11, the double-blind referee process was optional for authors. A total of 206 author teams opted to have their papers undergo refereeing, and 773 requests were sent to almost 400 individuals to review those papers. A total of 278 referees responded to the requests, each providing feedback on anywhere from one to six papers. These referees assessed papers for their scholarly contribution, relevance, review of related work, methodological quality, and quality of writing. Additionally, referees provided educative feedback for authors to consider when revising their papers for publication in the proceedings. Each paper was read by two, three, or four referees, and overall, the referees provided valuable and insightful feedback, contributing to the quality of papers included in the proceedings. Of the 170 proceedings papers that were refereed, 77% were accepted as refereed, which is in line with previous ICOTS. Those papers are designated as “refereed” in the proceedings.

It has been an honor and a privilege to serve as Lead Editor of the ICOTS11 proceedings and to work with a team of committed professionals who all have a passion for statistics education. I am humbled by the responsiveness and devotion of so many volunteers from referees to authors to the International Programme Committee (IPC) team to support the conference and these proceedings. Thank you to all who contributed to a successful ICOTS11 conference; enjoy the resulting proceedings that are filled with an abundance of insights that benefitted from the diverse expertise and contexts of all involved.

Sincerely,

Susan A. (Sue) Peters

Lead Editor, ICOTS11 Proceedings
University of Louisville, Kentucky, USA

Acknowledgements

A team of volunteers, who all deserve recognition, made these proceedings possible. My sincerest thanks to you all.

- IASE Executive, including President Ayse Bilgin and Past-President Gail Burrill, for their leadership, oversight, insights, and decision making as well as their support of and confidence in me
- Bruno de Sousa, IPC Chair, for his leadership and positivity under unprecedented circumstances to make ICOTS11 happen

- John Shanks, IPC member and Information Manager, who does all the behind-the-scenes work to make these proceedings possible and does so with a can-do attitude in an amazingly short response time
- Local Organizing Committee and IPC members, who braved uncharted territory and overcame significant obstacles with unwavering commitment during uncertain times to make ICOTS11 a success
- Topic/Poster Convenors, for their decision making and working with authors to form the conference program
- M. Alejandra Sorto, ICOTS10 Lead Editor, for sharing the wealth of knowledge she gained from editing the ICOTS10 proceedings and for committing to and completing that last set of needed reviews
- Lucia Zapata-Cardona, Sub-editor and IPC member, who graciously led the refereeing process for Contributed papers, stepped up to review a last set of Invited papers written in Spanish, and assumed editing responsibilities for papers written in Spanish
- Fernanda Bonafini, who stepped up to review a last set of papers written in Portuguese and who assumed editing responsibilities for papers written in Portuguese
- Anqi Fan, a dedicated and hard-working graduate assistant at the University of Louisville, who provided much-needed manpower to assist with blinding papers to be sent for review and with formatting papers to ensure they followed ICOTS guidelines
- Referees, without whom there would be no refereed papers—thank you, thank you, thank you!!!

List of Referees

Emmanuel Abatih	Marjorie Bond
Martin Abt	Manfred Borovcnik
Craig Alexander	María Luisa Bossolasco
Ángel Alsina	Gavin Brown
Ingrith Álvarez Alfonso	Stephanie Budgett
Rocío Álvarez-Arroyo	Michael Bulmer
José Ronaldo Alves Araújo	Gabriela Pilar Cabrera
Pip Arnold	Pedro Campos
Jana Asher	An Carbonez
Heather Barker	Pablo Carranza
Carmen Batanero	Carolina Carvalho
Jorge Luis Bazán Guzmán	Stephanie Casey
Matthew Beckman	Irene Mauricio Cazorla
Nuria Begué	Beth Chance
Pablo Beltrán-Pellicer	Rosa Daniela Chávez Aguilar
María José Bianco	Egan Chernoff
Rolf Biehler	Luciana Carla Chiapella
Ayse Bilgin	Kelli Cristina Conti
Karin Binder	Lisbeth Cordani
Lisa Birk	Solange Aparecida Corrêa
Matthew Black	Adriana Costa Santos da Silva
Anna Bloodworth	José Crespo
Kelly Bodwin	Mariana Cúri
Lonneke Boels	Dominic Dayta
Charlotte Bolch	Robert delMas
Fernanda Bonafini	Adri Dierdorp
Rafael Bonangelo	Gian Carlo Diluvi

Kirsten Doehler
Mine Dogucu
Ksenija Dumicic
Bruce Dunham
Thiago Dutra de Araujo
Michal Dvir
Elizabeth Eisenhauer
Joachim Engel
Tim Erickson
Diana Escobar
Cristina Esteley
Nicolás Alonso Fernández Coronado
Noemi María Ferreri
Rachel Fewster
Jill Fielding
Auriluci Figueiredo
Stella Maris Figueroa
Kelly Findley
Noleine Fitzallen
Sharleen Forbes
Karen François
Katherine Frey Frøslie
Daniel Frischemeier
Kym Fry
Hiroto Fukuda
Liliana García Barco
Israel García-Alonso
Jaime García-García
Jaime Andrés Gavira Bedoya
Maria Gea
Stine Gerster Johansen
Alison Gibbs
Cassio Cristiano Giordano
Monica Giuliano
Dulce Gomes
Ana Luisa Gómez Blancarte
Emilse Gómez-Torres
Ana Paula Gonçalves Pita
Mariana González
Luis Fernando González Beltrán
Robert Gould
Regina Célia Grando
Martin Graziano
Randall Groth

Gilda Guimarães
Layla Guyot
Saleha Naghmi Habibullah
Stacey Hancock
John Harraway
Neil Hatfield
Elisa Henning
Ana Henriques
Elizabeth Hernández Arredondo
Luis Armando Hernández Solis
Traci Higgins
Thomas Honnor
Dru Horne
Koki Hosoda
Jingchen Hu
Maryann Huey
Sven Hüsing
Hanan Innabi
Eilidh Jack
Sheri Johnson
Ryan Seth Jones
Charlotte Jones-Todd
Pavlina Jordanova
Nicola Justice
Asifa Kamal
Maria Cristina Kanobel
Jennifer Kaplan
Anushka Karkelanova
Sibel Kazak
Thomas Kneib
Diana Kohan
Gamze Kurt
Dean Langan
Cynthia Langrall
Aisling Leavy
Chelsey Legacy
Dennys Leite Maia
Larry Lesser
Sigal Levy
Ken Li
Shu-Min Liao
Ewellen Tenório de Lima
Flavia de Lira
Robin Lock

Celi Espasandin Lopes
Maria López-Martín
Marnie Low
Karsten Lübke
Alex Lyford
Diêgo Maciel
Vera Debora Maciel Vilhena
Adriana Noemí Magallanes
Martin Malaspina
Diego Manni
Carlos Alfonso Mantilla Duarte
Maria Silvania Marques Xavier de Souza
Cindy Alejandra Martínez-Castro
Leidy Nataly Mateus-Aguilera
Andreas Mayr
Zach Mbasu
Amelia McNamara
Maria Meletiou-Mavrotheris
Rayssa Melo de Oliveira
Oded Meyer
Claire Miller
Jack Miller
Fumihiko Mitsunaga
Megan Mocko
Jan Mokros
Adam Molnar
Edward Mooney
Amable Moreno
Laura Muñoz-Rodríguez
Maria Nascimento
Marcos Nascimento Magalhaes
Valerie Nazzaro
Ralf Nieszporek
Zoe Nye
Magnus Cesar Ody
Mario Miguel Ojeda
Dorcas Modupe Okewole
Fabiola Santos Martins de Araujo Oliveira
Paulo Oliveira
Ailton Paulo de Oliveira Júnior
José Antonio Orta Amaro
Pablo Ortiz
Miluska Osario
Augusta Osorio
Amita Pal
Efi Paparistodemou
Cristian Paredes Cancino
Rachel Passmore
Anne Patel
Fernanda Angelo Pereira
Maria Niedja Pereira Martins
Leticia Perez
Silvia Pérez
Andréa Pavan Perin
Maxine Pfannkuch
Robyn Pierce
Ramadha Piyadi Garnage
Susanne Podworny
Mauren Porciúncula
Theodosia Prodromou
Andreas Prömmel
Malia Puloka
Cileda de Queiroz e Silva Coutinho
Elisabete Rambo Braga
Vimal Rao
Mehdi Razzaghi
Yanina Redondo
Amy Renelle
Enriqueta Reston
Yilton Riascos Forero
Pedro Rocha Salamanca
Carlos Rodal
Sezilla Elizabete Rodrigues Garcia Olmo de Toledo
Beatriz Adriana Rodriguez González
Luis Rodríguez-Muñiz
Jo Røislien
Francisco Rojas
Kristen Roland
Rute Rosa Borba
Roseli Rosalino Dias Da Silva Angelino
Sandra Cristina Martini Rostriola
Andee Rubin
Gale Russell
Felipe Ruz
Anelise Sabbag
Jacob Sagrans
Siti Shahirah Saidi
Martín Saino

Audy Salcedo
Luis Saldanha
Silvia Caroline Salgado Pena
Nicolás Sánchez Acevedo
Mario Sánchez Aguilar
Alberto Santana-Ortega
Sarah Scheuerer
Milo Schield
Roberta Schnorr Buehring
Matthew Schofield
Karla Schreiber
Ana Serrado-Bayes
Saray Serrano Enciso
Carl Sherwood
Eleazar Silvestre Castro
Ivanete Zuchi Siple
Justin Slater
M. Alejandra Sorto
Antonio Carlos Souza
Danilo do Carmo de Souza
Fabiano dos Santos Souza
María Inés Stimolo
Sara Stoudt
Yelena Stukalin
Catalina Suarez-Rivera
Liliana Mabel Tauber
Dirk Tempelaar

Nathan Tintle
Igor Tkalec
Dina Tsybulsky
Francisca Manríquez Ubilla
Stella Vaira
Ödön Vancsó
Lucia Carolina Varela
Federico Vasches
Claudia Vasquez
Janielly Taila dos Santos Verbisck
Sandra Gonçalves Vilas Bôas
Maria de Fátima Vilhena Silva
Hilde Vinje
Markus Vogel
Diana Warren
Christoph Wassner
Jane Watson
Travis Weiland
Douglas Whitaker
Eugenia Yu
Lucia Zapata-Cardona