

IDWSDS 2023



October 10, 2023

# International Day of Women in Statistics and Data Science

Celebrating women statisticians and data scientists around the world

# **2023 INTERNATIONAL DAY OF WOMEN IN STATISTICS AND DATA SCIENCE**

## **CONFERENCE PROGRAM AND ABSTRACTS**

OCTOBER 10TH, 2023

A VIRTUAL 24 HOUR CONFERENCE

[HTTPS://IDWSDS.ORG](https://idwsds.org)

### **ORGANIZED BY**

CAUCUS FOR WOMEN IN STATISTICS AND DATA SCIENCE

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## TABLE OF CONTENTS

Welcome.....	5
Organizing Committee.....	6
Program Schedule.....	9
Time Converter .....	10
Session 1.....	11
Session 2.....	12
Speakers .....	13
Session 3.....	14
Speakers .....	15
Abstracts .....	16
Session 4.....	17
Speakers .....	18
Abstracts .....	19
Session 5.....	20
Speakers .....	21
Session 6.....	22
Speakers .....	23
Session 7.....	24
Session 8.....	25
Session 9.....	26
Speakers .....	27
Abstracts .....	28
Session 10 .....	29
Speakers .....	30
Session 11 .....	31
Speakers .....	32
Abstracts .....	33
Session 12 .....	34
Speakers .....	35
Session 13 .....	36
Speakers .....	37
Session 14 .....	38
Speakers .....	39
Abstracts .....	40
Session 15 .....	41
Speakers .....	42
Abstracts .....	43
Session 16 .....	44
Speakers .....	45
Abstracts .....	46
Session 17 .....	47
Speakers .....	48
Session 18 .....	49



Speakers .....	50
Session 19 .....	51
Speakers .....	52
Session 20 .....	53
Speakers .....	54
Session 21 .....	55
Speakers .....	56
Abstracts .....	57
Session 22 .....	58
Speakers .....	59
Session 23 .....	60
Speakers .....	61
Abstracts .....	62
Session 24 .....	63
Speakers .....	64
Abstracts .....	65
Session 25 .....	66
Speakers .....	67
Session 26 .....	68
Speakers .....	69
Session 27 .....	70
Speakers .....	71
Abstracts .....	72
Session 28 .....	73
Speakers .....	74
Abstracts .....	75
Session 29 .....	76
Speakers .....	77
Abstracts .....	78
Session 30 .....	79
Speakers .....	80
Session 31 .....	81
Speakers .....	82
Session 32 .....	83
Speakers .....	84
Session 33 .....	85
Session 34 .....	86
Speakers .....	87
Abstracts .....	88
Session 35 .....	89
Speakers .....	90
Abstracts .....	91
Session 36 .....	92
Sponsors .....	93
Thank you .....	94



# Welcome



Welcome to the second annual International Day of Women in Statistics and Data Science conference! We are thrilled to celebrate the achievements and experiences of women across the globe in these important fields. By sharing our career journeys, research interests, challenges, lessons learned, and passions, we are building and strengthening our community. These important lessons help us build the next generation of leaders and innovators in statistics and data science.

As you explore the program, pay close attention to the time of each session and make sure you know how to convert the UTC time to your local time. You will see an abstract about the topic, plus photos and bios for each presenter. We are pleased to have over 35 presentations from 22 countries. This is a huge increase from last year and we hope to continue to grow. As you review the program and participate in the conference, consider how you or statisticians in your area can collaborate for a future presentation.

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Jessica Kohlschmidt and Nairanjana (Jan) Dasgupta  
Co-chairs, 2023 International Day of Women in Statistics and Data Science  
Organizing Committee



# Organizing Committee



CYTHIA BLAND  
RTI International

Cynthia Bland directs the Center for Official Statistics at RTI International, a non-profit research firm specializing in government contracting. In her 20 years at RTI, she has designed and analyzed national surveys and is skilled in sample design and selection, complex weighting, statistical programming, data analysis, and reporting. She is certified in project management and leads multidisciplinary teams to produce high-quality outcomes. Cynthia leads a center of more than 80 statisticians as they innovate for clients and grow in their own careers.

Cynthia serves as the President-Elect for the Caucus for Women in Statistics. She has been active with the NC Chapter of the American Statistical Association and is a lecturer in statistics for the Kenan-Flagler School of Business at the University of North Carolina at Chapel Hill. Outside of the statistical world, Ms. Bland serves on the board of a local credit union and as a national vice president in her sorority.

<https://www.otago.ac.nz/healthsciences/expertise/Profile/?id=1088>



DR. CLAIRE CAMERON  
Biostatistics Centre, University of Otago, New Zealand

I am a biostatistician (and research Associate Professor) at the University of Otago, Dunedin, New Zealand. My work involves leading the methodological research in a range of applications in the context of health related research. I am a firm believer in professional networks and, in particular, women supporting other women.

<https://data-analytics.wsu.edu/meet-the-director/>

CO-CHAIR



IT'S PRONOUNCED DATA  
NAIRANJANA (JAN) DASGUPTA  
Washington State University

Nairanjana (Jan) Dasgupta is a Boeing Distinguished Professor of Science and Mathematics and Professor in the Department of Mathematics and Statistics. She also the Directs of the Data Analytics Program. She was the founding Director of Center of Interdisciplinary Statistics Education and Research (CISER). She has been a fellow of American Statistical Association (ASA) since 2018. She is part of the Advisory Board for Academic Data Science Alliance (ADSA) since 2020. She is the past-President for Caucus for Women in Stats (CWS) and chairs the JEDI section for WNAR International Biometric Society. She is the vice-chair for the Committee for Women in Statistics for 2024. She is passionate and vocal about data literacy for all.

Nairanjana's forte is interdisciplinary research, solving real life problems from other disciplines and developing feasible statistical methodology. She is involved with all three areas of faculty life: research, teaching, and service. Her interest in interdisciplinary research is apparent in her 65+ publications. Exposing her students to real-life problems and teaching them how to communicate their solutions has always been her mantra in her classes. She has served as advisor to 80+ graduate students (MS and PhD). She is on the editorial board of "The American Statistician" and served on "Journal of Statistical Computations and Simulations" till 2016. She has an active research profile and has been funded by NIST, NSF, NIH and is currently PI on two funded grants and co-PI on two funded grants. In 2022 she was awarded the "woman of the year" award by WSU. In 2023 she was inducted into the Washington Academy of Sciences.

She is a very involved mother and is active about advocacy for learning disabilities, special education. She enjoys reading, poetry, art and cooking, especially using Indian spices in other cuisines.

<https://ohsu-psu-sph.org/our-school/faculty-directory/name/rochelle-fu/>



DR. ROCHELLE FU  
School of Public Health, Oregon Health & Science University

Dr. Rochelle Fu is the director of the biostatistics education program and a professor of biostatistics in the School of Public Health, Oregon Health & Science University (OHSU). She's also a professor in the Department of Medical Informatics & Clinical Epidemiology at OHSU. She advises School of Public Health biostatistics students in the M.S., M.P.H. and Graduate Certificate programs. As a biostatistician, Dr. Fu collaborates extensively with OHSU investigators with a productive record of more than 280 publications. She had been the lead biostatistician for the Center for Policy and Research in Emergency Medicine and Research Center for Gender-Based Medicine at OHSU. Currently, she serves as the lead biostatistician for the Pacific Northwest Evidence-based Practice Center and has provided statistical support and methodology development for many systematic reviews and comparative effectiveness review projects, including those for the U.S. Preventive Services Task Force, the drug effectiveness review project, the Effective Health Care program and other professional societies. These reviews have been used to develop clinical guidelines or inform health policy decisions. She is also member of the Biostatistics Shared Resources of Knight Cancer Institute. Her research interests include Bayesian meta-analysis, mixture models, clinical trials and novel applications of statistical methodology in biomedical and public health science.



PROF. SALEHA HABIBULLAH  
Kinnaid College For Women, Lahore, Pakistan

Saleha Naghmi Habibullah is Professor of Statistics at Kinnaid College For Women in Lahore, Pakistan. As well, she is rendering services as Honorary Executive Director at the Pak Institute of Statistical Training And Research (PISTAR). During her 40 years at Kinnaid, she has initiated a number of projects and programs that were new to her country at the time of being launched. These include statistical poster competitions and exhibitions, small-scale sample surveys by undergraduate students, an annual internship program for the students at the Pakistan Bureau of Statistics, and others. At PISTAR Saleha has been instrumental in starting a series of online training workshops which is an enriching activity due to its international nature. She has travelled the world and represented her country in a large number of international conferences through presentation of papers in contributed and invited paper sessions.. She is the recipient of a number of national and international honors and awards, the most recent of them being the CWS Societal Impact Award.



# Organizing Committee

continued...



PROF. LÍGIA HENRIQUES-RODRIGUES

University of Évora and CIMA

<https://www.researchgate.net/profile/Ligia-Rodrigues-2>

Lígia Henriques-Rodrigues is an Assistant Professor in the Mathematics Department, School of Science and Technology at University of Évora (Portugal) and a researcher in the Center of Mathematics and Applications, Institute for Research and Advanced Training at the same institution. She is the author of several papers published in peer-reviewed International Journals, book chapters, and conference proceedings. Her main research interests are Statistics of Extremes, Nonparametric Statistics, and Computational Statistical Methods, with applications in Life Sciences, Environment, Risk, Insurance and Finance. Additionally, she has contributed as a referee for several international peer-reviewed journals, and national and international conferences.



DR. SAYANTEE JANA

Indian Institute of Technology Hyderabad

<https://sites.google.com/math.iit.ac.in/sayanteejana/home>

I am a Statistics Professor with a diverse experience of teaching doctors, engineers, lawyers, government officers, corporate executives, MBA and undergraduate students. I work on a few different fields of statistics and Machine learning and collaborate with industry and academia abroad, on research and consultancy projects. My research areas include but is not limited to Machine Learning Models and Data mining for big data from finance and healthcare industry, spatio-temporal modelling and maps, modelling of skewed and volatile data for financial data, and adaptive designs (skewed randomization) for clinical trials in the pharmaceutical industry. I did my PhD in Mathematical Statistics from McMaster University in 2017 and was a Postdoctoral Fellow at the University of Toronto till 2018 working on data mining for big data.

I received the prestigious Queen Elizabeth Scholarship and Fields Research Fellowship to visit the University of Toronto. I was also the IBS Young Ambassador to the World Statistics Congress in 2019 and the Florence Nightingale Award Winner in 2020. I have served on the Social Program Committee and Awards Committee for the International Biometrics Conference 2022. I serve as the Chair of the Country-Representatives Committee for the Caucus for Women in Statistics and its Governing Council member. I have been on panels and organizing committees of international conferences and is an Associate Editor of Statistica Neerlandica, a peer-reviewed journal by the Netherlands Society for Statistics and Operations Research.



DR. DONG-YUN KIM

NHLBI/NIH

<https://www.kimdongyun.com/>

Dr. Dong-Yun Kim is a mathematical statistician at the Office of Biostatistics Research (OBR) within National Heart, Lung, and Blood Institute, National Institutes of Health in Bethesda, Maryland. She received PhD in Statistics from the University of Michigan, Ann Arbor in 2003. Before joining NIH in 2013, she held a faculty position at Virginia Tech. Her research interests include fully sequential monitoring in clinical trials and change-point inference. Currently she is involved in large NHLBI-sponsored clinical trials and intramural projects in MRI imaging and pulmonary diseases. Dr. Kim has years of experience in collaborative research in other areas including mobile health, bioengineering, and environmental science. She is serving as President of the Caucus for Women in Statistics and Data Science (CWS), and a board member for Korean International Statistics Society (KISS).



CO-CHAIR

DR. JESSICA KOHLSCHMIDT

The Ohio State University

<https://fisher.osu.edu/people/kohlschmidt.1>

Dr. Jessica K. Kohlschmidt grew up in Houston, Texas, with five siblings. She was encouraged to pursue a college education so she could always support herself if she needed to. A first-generation college student, she had a passion for math from a young age and grew up with an interest in teaching. She would teach dolls or children—whichever was available. Thus, it was an easy choice to study math and teaching in college, although that has looked different throughout her life.

Dr. Kohlschmidt pursued a degree in mathematics and ended up minoring in statistics. Statistics was a real-world application of math that made sense and inspired her. Therefore, when Sam Houston State University created a new master's in statistics program, she joined the program. Later, she attended The Ohio State University and earned a Ph.D. Dr. Kohlschmidt dreamed of sharing her inspiration with others and envisioned that would happen through teaching in a college classroom.

Dr. Kohlschmidt has taught full and part-time at colleges since 1999. She was the PhD biostatistician at the Clara D. Bloomfield Center for Leukemia Outcomes Research at The Ohio State University Comprehensive Cancer Center for 12 years. In that role, she was a consulting statistician and had the opportunity to apply statistics to real-world problems and teach collaborators about statistics and how to interpret results in a meaningful and appropriate way.

A longtime officer of the Caucus for Women in Statistics (CWS)—serving for 10 years as secretary and, in 2018, as the first executive director—Dr. Kohlschmidt currently oversees CWS operations. She is enthusiastic about the new directions CWS has undertaken, including efforts to increase international visibility and outreach to young people. Dr. Kohlschmidt has a passion for helping young people, especially girls, learn about statistics and explore it as a career option. This is something she has been able to do more of through CWS and the Florence Nightingale Day event that has occurred over the last five years and is sponsored by the CWS and American Statistical Association (ASA).

Dr. Kohlschmidt is actively involved with the ASA and serves as Vice Chair for District 3 for the Chapter of Councils, past president for the Columbus Chapter, and co-chair for the History in Statistics Interest Group. She feels honored when her work and effort are appreciated and when a student or collaborator expresses gratitude for the help and understanding of statistics she has provided.



PROF. TAERIM LEE

Korea National Open University

Taerim Lee is an honorary Professor of Dept. Of Statistics & Data Science, KNOU. She was former Dean of College of Natural Science of KNOU. She works 37 years in the fields of Life Long Learning at KNOU teaching Statistics delivered using TV, PC, Web and mobile too.

She is a biostatistician and the main research field is tree-based classification model with CART, FACT, NN, Kernel Discrimination, Deep Learning for HCC patients, survival tree for Oral Squamous Cell Carcinoma. She was formerly vice president of Korean Statistical Society, the former vice president of International Association of Statistics Education under ISI, Health Statistics(2009-2011) and the former president of Korean Classification Society(2008-2016), council member of IFCS(2000-now), Treasurer and was elected as the 2nd term Executive Board Director of IBS(2015-2021) and Organizing Committee member of International Prize in Statistical Foundation(2018-now).



# Organizing Committee

continued...



MYRTO LIMNIOS

University of Copenhagen, Denmark

<https://myrtolimnios.github.io>

Myrto is a Postdoctoral Fellow at Copenhagen Causality Lab, Department of Mathematical Sciences, University of Copenhagen, mentored by Prof. Niels R. Hansen. Her interests are related to causal learning for time-dynamic systems, and in particular to conditional independence testing and learning algorithms.

Her research is centred on statistical learning theory and nonparametric hypothesis testing, with possible applications in biostatistics.

Myrto grew up in France and got two Masters at Université Paris Diderot and Ecole des Mines Nancy, before obtaining her PhD at Centre Borelli, Ecole Normale Supérieure Paris-Saclay, Université Paris-Saclay. Her thesis, entitled "Rank processes and statistical applications in high dimension", was supervised by Prof. Nicolas Vayatis and Ioannis Bargiotas.



DR. ALTEA LORENZO-ARRIBAS

Biomathematics and Statistics Scotland (BioSS)

<https://www.bioss.ac.uk/people/altea>

Altea works as a socio-economic statistician in collaboration with researchers at the Scottish Environment, Food and Agriculture Research Institutions. She is an elected council member of the Royal Statistical Society and the secretary of the History of Statistics Section, as well as a member of the Women Committee of the Spanish Society of Statistics and Operations Research, and the Spanish Biostatistics Network (Biostatnet).



PROF. WENDY LOU

University of Toronto

Wendy Lou is Professor and Head of the Division of Biostatistics at the Dalla Lana School of Public Health, University of Toronto, Canada. She is a Fellow of ASA and is the Canada Research Chair in Statistical Methods for Health Care. Prior to her current position, she was Associate Professor in the former Department of Biomathematical Sciences at the Mount Sinai School of Medicine, NYU. Her research has focused on the development of statistical methodology for the study of chronic conditions and quality improvement, as well as on biomedical applications of the distribution theory of runs and patterns. Her recent leadership roles include serving as President of the Statistical Society of Canada and as President of CWS. During her term as the CWS President in 2020, she established the Promoting Positive Professional Environments (P3E) Committee, initiated the Talk-the-Walk Series and the It's Happy Hour Somewhere, and created the CWS Societal Impact Award.



DR. VANDA LOURENÇO

NOVA University of Lisbon

Vanda M. Lourenço (VML) is an Assistant Professor in the Department of Mathematics at the NOVA School of Science and Technology, part of the NOVA University of Lisbon. Her primary research focus revolves around robust, non-parametric, and computational statistics, particularly in the context of genetic/genomic association studies and the prediction of quantitative traits. Her expertise has primarily been applied to challenges in plant breeding, yet she maintains a keen interest in extending these statistical methodologies to animal and human studies. In addition to her academic work, VML actively contributes to various statistical societies. Currently, she holds the position of President of the Supervisory Board at the Portuguese Statistical Society (SPE) and serves as the 'Portuguese Country Representative' within the Caucus for Women in Statistics (CWS), where she is also a member of the Nominations Committee.



# Program Schedule



Session	Time (UTC)	Title	Country
1	00:00-00:30	Welcome	All
2	00:30-01:00	A New Class of Orthogonal Space-Filling Designs	China
3	01:00-02:30	Women in Statistics in Korea (WISK)	Korea
4	02:30-03:30	Fostering Diversity and Inclusion in Japan's Data Science Landscape	Japan
5	03:30-04:30	Female Students' Participation in Statistics and Data Science: A Reflection	Indonesia
6	04:30-05:00	Lessons Learned: Walking Together Towards Success with Collaboration!	Australia
7	05:00-05:30	Networking for Success	Australia
8	05:30-06:30	Monash EBS PhD contest	Australia
9	06:30-07:00	Empowering Insights: Celebrating Women in Statistics and Data Science	India
10	07:00-07:30	A Simulation Study to Explore the Effect of Repeated Use of Individual Patient Data in a MAIC Adjusted Network Meta Analysis	Bangladesh
11	07:30-08:30	Young Researchers from India	India
12	08:30-09:30	Panel on Careers in Statistics and Data Science Across Academia, Government and Industry	India
13	09:30-10:00	The Profound Impact of My Mentor on My Journey	Pakistan
14	10:00-11:00	Estimating International Migration Flows with Administrative Data	UK
15	11:00-12:00	Change Starts with Awareness	Italy
16	12:00-13:00	Portuguese Contributions in Statistics and Data Science	Portugal
17	13:00-13:30	Data Analytics Consulting in Nigeria: Projects, Challenges, Solutions, and Lessons	Nigeria
18	13:30-14:00	Aspects of Biplots in Multidimensional Visualization	South Africa
19	14:00-15:00	Statistical Models for Conservation Translocations	UK
20	15:00-16:00	Women and Big Telescopes	UK
21	16:00-17:00	The Role of Creativity and Innovation in Statistics and Data Science	USA
22	16:00-17:00	Collaborating as a Woman in Statistics	UK
23	17:00-18:00	Journey of Early Career Women in the Pharmaceutical Industry and Their Paths Forward	USA
24	17:00-18:00	Junior Advances in Bayesian Methods for Complex Data	UK
25	18:00-19:00	Florence Nightingale Day	USA
26	18:00-18:30	Recent Developments in Multivariate Regression	USA
27	18:30-20:00	FENStatS Women in Action	Europe
28	19:00-20:00	Empowering Women's Position in Scientific Research and Statistical Organizations for a Better World: Focusing on Selected European Countries	Croatia
29	20:00-21:00	Research at NIH from Women Statisticians	USA
30	20:30-21:00	Bilinear Regression Models Useful in the Analysis of Longitudinal and Clustered Longitudinal Data	Canada
31	21:00-21:30	10 Simple Rules for Teaching Data Science	Canada
32	21:00-21:30	A Historical Perspective on the Role of Women in Statistics	Argentina
33	21:30-22:00	Networking Session	USA
34	22:00-23:00	Being a Woman in Brazil: Statistics on Gender and Challenges	Brazil
35	23:00-24:00	Exploring Gender Disparities in Health, Education, and Employment in Costa Rica	Costa Rica
36	24:00-24:30	Closing	All



# Time Conversions



IDWSDS 2023 is a 24 hour conference being held Tuesday, October 10th. All session times are given in Universal Time Coordinated (UTC) format. Please use the conversion table below or visit a site like <https://www.utctime.net/> to get the current UTC time and time in your area.

Country	Local Time Zone	Conversion
China	CST	UTC+8
Korea	KST	UTC+9
Japan	JST	UTC+9
Indonesia	Multiple*	UTC+7
Australia	AEST	UTC+10
India	IST	UTC+5:30
Bangladesh	BDT	UTC+6
Pakistan	PKT	UTC+5
UK	WET	UTC+1
Italy	CET	UTC+2
Portugal	WET	UTC+1
Nigeria	WAT	UTC+1
South Africa	CAT	UTC+2
USA	Multiple*	UTC-4
Spain	WET	UTC+1
Croatia	CET	UTC+2
Canada	Multiple*	UTC-4
Argentina	ART	UTC-3
Brazil	Multiple*	UTC-2
Costa Rica	CST	UTC-2





# Session Info

S1

October 10th, 00:00 - 00:30 UTC

## Opening Session

This session will feature ASA President Dionne Price and CWS President Dong-Yun Kim as they welcome the participants for the 2nd annual International Day for Women in Statistics and Data Science.

After a short presentation by the two Presidents, the program Chairs (Jessica Kohlschmidt and Nairanjana (Jan) Dasgupta) will present some facts and figures about this conference and the protocol for the talks.

This is open to all participants of the conference and is a wonderful forum to ask questions and meet the members of the Program Committee. There will be a video of people from around the world wishing us “Happy International Day for Women in Stats and Data Science” in different languages.



DIONNE PRICE  
ASA President



DONG-YUN KIM  
CWS President



JESSICA KOHLSCHMIDT  
Program Co-Chair



NAIRANJANA (JAN) DASGUPTA  
Program Co-Chair

**ORGANIZER:** Jessica Kohlschmidt and Nairanjana (Jan) Dasgupta

**CHAIR:** CWS Executive Committee

**SPONSOR:** CWS



# Session Info



S2

October 10th, 00:30 - 01:00 UTC

## A New Class of Orthogonal Space-Filling Designs

The space-filling property and orthogonality are perhaps two most desirable design properties for computer experiments. The space-filling property is appropriate for Gaussian process models, while orthogonality allows the estimated effects to be uncorrelated. This paper presents a general approach for constructing a rich class of orthogonal designs with attractive space-filling properties. This is apparently new in the literature. The construction methods are straightforward to implement. Their theoretical supports are established. Moreover, the resulting designs are flexible in the run sizes.

**ORGANIZER:** Rochelle Fu, Oregon Health & Science University

**CHAIR:** Xiaoling Lu, School of Statistics, Renmin University of China

**SPONSOR:** International Chinese Statistical Association



# Speaker Bios

S2



CHUNYAN WANG

School of Statistics, Renmin University, China

Dr. Chunyan Wang graduated from Nankai University with a degree in Statistics, and her research interests include experimental designs, computer experiments, and order-of-addition experiments. Her supervisor is Prof. Minqian Liu. During her Ph.D., Chunyan Wang visited the University of Tennessee, USA, and worked under the supervision of Professor Robert Mee. After completing her Ph.D., Chunyan Wang joined the Department of Statistics at Purdue University as a postdoctoral research assistant in July 2021, and continued her research work in statistical experimental design under the supervision of Prof. Dennis Lin. Then she joined the School of Statistics of Renmin University of China as a lecturer in August 2022. Currently, Chunyan Wang has 6 papers accepted and published online in *Annals of Statistics*, *Statistica Sinica*, *Journal of Quality Technology*, *Journal of Statistical Planning and Inference*.



# Session Info



S3

October 10th, 01:00 - 02:30 UTC

## Women in Statistics in Korea (WISK)

We have four talks in our session in which the first three talks include deep learning method related with contextual bandits (presented by Myunghee Cho Paik, Professor of Statistics, Seoul National University), probabilistic graphical models based on genetic data (presented by Hyojung Lee, Assistant Professor of Department of Statistics, Kyungpook National University), and modeling of COVID-19 transmission dynamics in Korea (presented by Min Jin Ha, Assistant Professor of Department of Health Informatics and Biostatistics, Yonsei University), respectively. Final talk is a brief introduction about WISK and KSS (Korean Statistical Society) presented by Seungyeoun Lee, president of WISK and Sohee Park, vice-president of WISK, will introduce IBC2026 (International Biometric Conference) which will be held in Korea in 2026.

**ORGANIZER:** Seung Yeoun Lee, Sejong University

**CHAIR:** Sohee Park, Yonsei University

**SPONSOR:** KOSEF



# Speaker Bios

S3



PROF. MYUNGHEE CHO PAIK

Seoul National University

Myunghee Cho Paik has been Professor of Statistics at Seoul National University since 2012. She received a Ph.D. in Biostatistics from University of Pittsburgh in 1987. She served as a professor in the Department of Biostatistics at Columbia University from 1988 to 2012 before joining the Department of Statistics, Seoul National University. Her research area includes longitudinal data, missing data, and sequential decision-making.



PROF. HYOJUNG LEE

Kyungpook National University

#### Affiliation

- Assistant professor, Department of Statistics, Kyungpook National University

#### Academic history

- PhD, Department of Mathematical Sciences, Ulsan National Institute of Science and Technology (UNIST)  
- B.S., Department of Statistics, Kyungpook National University (Double major: statistics, mathematics)

#### Research Topic

Mathematical modeling for infectious disease, statistical analysis using epidemiological data



PROF. MIN JIN HA

Yonsei University

Assistant professor, Department of Health Informatics & Biostatistics, Graduate School of Public Health, Yonsei University (March 2022-current)

Assistant professor, Department of Biostatistics, The University of Texas MD Anderson Cancer Center, Houston, TX (September 2018-February 2022)



PROF. SEUNGYEOUN LEE

Sejong University

<https://sejong.elsevierpure.com/en/persons/seungOyeoun-lee>

Dr. Seungyeoun Lee is a professor in the Department of Mathematics and Statistics in Sejong University. She is also currently working as a president of Women in Statistics in Korea (WISK). She received her Ph.D. in Biostatistics from University of Michigan and MS in Statistics from Seoul National University. Her research interest includes survival analysis, gene-gene interactions and clinical trials.





### Sequential Decision Making with Uncertainty: Contextual Bandits as a Missing Data Problem

*Myunghee Cho Paik, Seoul National University*

The contextual bandit is a sequential decision-making problem where a learner repeatedly selects an arm based on contextual information and receives a reward as partial feedback associated with the chosen arm only. Bandit methodologies have been applied in enhancing health outcomes through self-guided digital interventions. The learner's objective is to maximize cumulative rewards over time while facing uncertainty regarding the underlying true reward-generating mechanism. We cast the contextual bandit as a missing data problem and introduce novel algorithms. We discuss their advantages from a non-asymptotic perspective. Through empirical analysis, we demonstrate the superior performance of our proposed algorithm compared to existing methods.

### Modeling and Data Analysis of COVID-19 Transmission Dynamics in Korea

*Hyojung Lee, Kyungpook National University*

Over the past two decades, several coronaviruses have emerged, including SARS-CoV, MERS-CoV, and SARS-CoV-2. These viruses, along with newly identified variant strains, continue to present an increasingly serious global threat. The rapid spread of misinformation about these outbreaks has also contributed to a worldwide sense of alarm. In response, the Republic of Korea has opted for a localized quarantine strategy as opposed to a global lockdown. This approach has proven effective in containing the spread of the diseases. The Korean government has adapted this policy based on the severity of each epidemic. To offer accurate scientific insights and guide policy formulation, mathematical and statistical models have been harnessed to predict the transmission dynamics of COVID-19. Initially, we delve into the distinctive traits of COVID-19 transmission patterns in Korea and the "K-quarantine" measures that were implemented during different phases of the pandemic. Subsequently, we delve into the analysis of mathematical and statistical models to gauge the efficacy of COVID-19 vaccination efforts. Furthermore, we assess the impact of various control interventions. Lastly, we spotlight recent research areas that pertain to the transmission of COVID-19 in the Korean context.

### Bayesian Robust Learning in Graphical Models

*Min Jin Ha, Yonsei University*

Existing literature mostly focus on Gaussian graphs, which are ill-suited for non-normal distributions with heavy-tailed marginals, potentially leading to inaccurate inferences. We propose a Bayesian robust graph model based on random transformations of marginals using Gaussian scale mixtures to account for node-level non-normality in continuous multivariate data. This flexible modeling strategy facilitates identification of conditional sign dependencies among non-normal nodes while still being able to infer conditional dependencies among normal nodes. In simulations, we demonstrate that our approach outperforms existing Gaussian graph inference methods in data generated from various non-normal mechanisms. We apply our method to genomic, transcriptomic and proteomic data to understand underlying biological processes holistically for drug response and resistance in lung cancer cell lines.

### Introduction of WISK and KSS (Korean Statistical Society)

*Seungyeoun Lee, Sejong University*

Women in Statistics in Korea was established in May, 2019 by professor, Taelim Lee. WISK belongs to Korea Federation of Women's Science & Technology Associations which currently includes 78 organizations. WISK has many activities during 2019-2022, which include organizing a young women statisticians's session in the Conference of Korean Statistical Society, R workshops and Job Seminars. WISK actively involves the International Days of Women Statistics and Data Sciences in 2022 and 2023. In addition, a brief introduction of KSS will be given since WISK is one of organizations of KSS. Finally, professor Sohee Park who is currently president of Korea region of the International Biometric Society (IBC) will advertise for the 2026 IBC Meeting which will be held in Seoul.





# Session Info



S4

October 10th, 02:30 - 03:30 UTC

## Fostering Diversity and Inclusion in Japan's Data Science Landscape

This session aims to spotlight the advancement of diversity and inclusivity within the realm of statistics and data science in Japan. While Japan has historically maintained a male-centric work environment, there has been a growing recognition of the significance of embracing and harnessing talents from diverse backgrounds. The session will feature keynote presentations from two distinguished researchers and administrative professionals who have demonstrated leadership and prominence in this domain within Japan. Additionally, messages from the Presidents and former Presidents of JSS, ISM, and IAOS will be incorporated. Through this session, we aspire to share with our participants the journey of Japan as it strives to foster diversity and inclusivity, fostering a more enriched environment in the field of statistics and data science.

**ORGANIZER:** Michiko Watanabe, Chair of the JSS Section of WiSDS, Rissho Univ  
**CHAIR:** Mihoko Minami, Chair of JSS Special committee of Promotion for Diversity, Keio Univ.  
**SPONSOR:** Japan Statistical Society



# Speaker Bios

S4

<https://researchmap.jp/yabiost?lang=en>


**PROF. YUKO ARAKI**  
Tohoku University

Prof. Yuko Araki, having completed both Bachelor's and Master's degrees in Canada, followed by doctoral research at Kyushu University, currently serves as a Professor of Statistical Mathematics at the Graduate School of Information Sciences at Tohoku University.



**RIKAKO HASHIMOTO**  
Government of Japan

Ms. Rikako Hashimoto joined the Ministry of Internal Affairs and Communications (MIC) in 2019, and after experiencing work on policy evaluation and work style reform, currently work on promotion of the use of big data, which is considered to be effective in producing accurate and efficient statistics.



**PROF. NOBUHIKO TERUI**  
Tokyo University of Science

The president of the Japan Statistical Society(JSS), and professor at Tokyo University of Science.



**PROF. HIROE TSUBAKI**  
The Institute of Statistical Mathematics

Hiroe Tsubaki is Director General and Professor Emeritus of the Institute of Statistical Mathematics in Tokyo and Chairperson of the Statistics Committee of the Ministry of Internal Affairs and Communications. He received his PhD in engineering from the University of Tokyo in 1980. He then worked as a lecturer at Keio University's Faculty of Science and Technology, a professor at the University of Tsukuba's Graduate School of Business Sciences, a professor at the Institute of Statistical Mathematics and director of the Risk Analysis Research Center, and president of the National Statistics Center. He has been interested in the application of statistical methods in various fields and has practiced quality management, reviewing of new drug application, satellite environmental measurement and international standardization activities of statistical methods. He has served as president of the Japan Statistical Society for Applied Statistics, the Japanese Society for Quality Control, and is currently president of the Robust Quality Engineering Society.



**SHIGERU KAWASAKI**  
Shiga University

Mr. Shigeru Kawasaki is currently Special Invited Professor at Data Science and AI Innovation Research Promotion Center of Shiga University, Japan. He has a long career in official statistics, and headed the Statistics Bureau of Japan from 2007 to 2011. He assumed several roles in international statistical organizations, such as President of the International Association for Official Statistics (2013-2015) and Chairman of the United Nations Statistical Commission (2020-2021).







### Encounter and Journey with Statistics

*Yuko Araki, Tohoku University*

Prof. Yuko Araki's primary focus has been on the development of statistical models based on functional data analysis and research aiming at high-dimensional and spatiotemporal measurement data. Over the years, she has ventured into applying these models to real-world data in areas such as pediatric treatment and sign language learning. A driving goal has been to leverage statistics and AI to optimize individuals' physical and mental states, aiming for a society with increased well-being. Drawing from her experiences in Canada's diverse environment and an active background in promoting gender equality in Japanese universities, she will also address the importance of promoting diversity.

### Career development as an administrative officer in the field of official statistics

*Rikako Hashimoto, Office of Director-General for Policy Planning on Statistical Policy, Ministry of Internal Affairs and Communications, Government of Japan*

In the speaker's department, an empirical research has been conducted, which is on the possibility of utilizing human flow data for the government's tourism statistics. In collaboration with researchers and data providers, staffs of the department has been making an effort to identify the characteristics of human flow data, and sharing issues and solutions for its utilization. In addition, the "Big Data Portal" is being operated to aggregate information on big data utilization efforts in industry, government, and academia. In the statistical department of the MIC, where the speaker works, many women are active, and there is a good environment in which they can manage their careers and private lives. In this environment, the speaker's future goal is to develop a unique career based on her own background.

### Empowering Diversity in Statistics and Data Science: A Vision from the Japan Statistical Society

*Nobuhiko Terui, Tokyo University of Science*

I first present the overview of the Japan statistical society, particularly, in relation to diversity, and then introduce the activities by our committee on the promotion of diversity.

### Necessity of measures against the rapid decline in the number of female researchers in mathematics and statistics at Japanese universities

*Hiroe Tsubaki, The Institute of Statistical Mathematics*

Despite the recent increase in the percentage of female researchers in many academic fields at Japanese universities and research institutes, the percentage has rather decreased in the field of mathematics, including statistics. On the other hand, in statistical data analysis competitions, female high school students have taken first place four times in the past five years. Therefore, there is an urgent need to take measures to enable talented young female students with an aptitude for statistical science to play an active role in research activities in statistical and mathematical sciences.

### Women in Statistics and Data Science in Japan: Current Status and Future Prospects

*Shigeru Kawasaki, Shiga University*

In my short presentation, I shall summarize the current situation of gender balance in Japanese statistical communities in the context of the whole country, and discuss future prospects and measures to improve the gender situation in Japan.



# Session Info



S5

October 10th, 03:30 - 04:30 UTC

## Female Students' Participation in Statistics and Data Science: A Reflection

The gender gap in Science, Technology, Engineering, and Mathematics (STEM) fields is still not closing fast enough, including in Statistics and Data Science. MIT Professional Education reported that in 2023, only 28% of the global STEM workforce are women. If we looked at the numbers at the regional levels, the gaps are even larger, 24% in the US, 17% in European Union, 16% in Japan, and 14% in India. Even though the percentage of women statisticians is better, for example, in the United States, 36.8% statisticians are women, the number for women data scientists is staggering. Only 15% of the world's data scientists are women. I tried to look closely on this phenomenon at Universitas Syiah Kuala, where I teach mathematics, statistics, and data science. Among 1118 students majoring in Mathematics, Statistics, and Informatics, 61% of them are women. However, only few of them are interested to study data science. When I looked closer, I found most female students avoid using advanced programming that they thought is the core for modern statistics and data science. I will discuss some evidences of my findings and some suggestions to interact more female students to statistics and data science.

**ORGANIZER:** Rini Octavia, Universitas Syiah Kuala, Aceh, Indonesia

**CHAIR:** Nairanjana (Jan) Dasgupta, Washington State University

**SPONSOR:** CWS



# Speaker Bios

S5

**RINI OKTAVIA**

Universitas Syiah Kuala

Rini Oktavia got the Bachelor and Master degree in Mathematics from Institut Teknologi Bandung (ITB), Indonesia. She got her second Master in Mathematics from The University of Texas at Austin, USA. She gained her PhD in Mathematics Education with concentration in Statistics Education from Texas State University, USA. She was a teaching assistant at Texas State University from 2009-2013 and worked as a lecturer in mathematics and statistics at Valparaiso University in Indiana, USA from 2013-2015. She is currently the secretary of the Department of Mathematics, Universitas Syiah Kuala in Aceh, Indonesia.

She is actively conducting research in STEM Education and Statistics and Data Science. She is currently working in research on the development of community learning center to improve community's literacy and numeracy including data and digital literacy. She is also working on the use of GAMLSS for actuarial and biomedical data analysis.



# Session Info



S6

October 10th, 04:30 - 05:00 UTC

## Lessons Learned: Walking Together Towards Success with Collaboration!

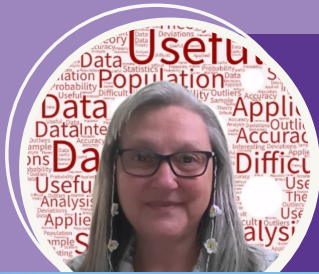
It is very exciting to be at the beginning of one's career in Statistics. There are a lot of possibilities, and a lot of opportunities to excel. Though, interconnectedness, collaboration and working together helps a lot. Identifying a good mentors' network to achieve one's best to work towards a high achieving career is really important. Would you like to hear from an academic in Statistics who were able to find ways to get help whenever she needed? Would you like to learn from my experiences so that your journey towards the success is much faster? If so, come along to learn and benefit from my experiences of how to create collaborations and how to achieve your best!

**ORGANIZER:** Saleha Naghmi Habibullah, Kinnaird College For Women, Lahore, Pakistan  
**CHAIR:** Nairanjana (Jan) Dasgupta, Washington State University  
**SPONSOR:** CWS



# Speaker Bios

S6



PROF. AYSE AYSIN BILGIN

Macquarie University

<https://researchers.mq.edu.au/en/persons/ayse-bilgin>

BEng., MBA, MMaths, PhD, PostGradDip HE (L&T), MHE (L&M)

Ayse is the Past-President of the International Association for Statistical Education (IASE) and an elected Member of the International Statistical Institute (ISI). Ayse's research explores applications of statistics in health sciences and learning and teaching in statistics. Ayse is an academic who uses her statistical knowledge to improve health and wellbeing as well as improving learning and teaching of statistics.

Ayse was a recipient of several learning and teaching awards for her outstanding contributions to student learning such as an Australian Learning and Teaching Council Citation for 'Outstanding Contributions to Student Learning', a Macquarie University VC Citation, ATEM Award Community Engagement (Highly Commended); Higher Education Award for Employability; joint-recipient of Australian Awards for University Teaching, Excellence Award for Inter-Departmental Collaboration on Capstone Unit for BSc. Her pedagogical research interests are focused on statistics education, such as learning approaches in statistics, work integrated learning in statistics, impact of learning spaces to students' learning. She was awarded "Excellence in research: Five Future-shaping Priorities" by Macquarie University and she was a member of research team which were the finalist of the Eureka Prize in 2017.



# Session Info



S7

*October 10th, 05:00 - 05:30 UTC*

## Networking for Success

Join us for a 30 minute networking session. This is for those attendees based in Australia and New Zealand but all are welcome!

**ORGANIZER:** Ayse Aysin Bilgin, Macquarie University

**CHAIR:** Ayse Aysin Bilgin, Macquarie University

**SPONSOR:** Ayse Aysin Bilgin, Macquarie University



# Session Info



S8

October 10th, 05:30 - 06:30 UTC

## Monash EBS PhD Contest

We are excited to announce a special session organised by the Department of Econometrics and Business Statistics at Monash University in celebration of the International Day of Women in Statistics and Data Science. Our department is inviting all female PhD students in Statistics and Data Science to submit abstracts of their research projects for consideration. This is a unique opportunity to share your work with a global audience of professionals, academics, and fellow students. We are offering a cash prize of 500 AUD to the participant who delivers the best presentation during the session. This award is intended to recognise and support the outstanding contributions of female PhD students.

A panel of three experts from our department, each with extensive experience in Statistics, Econometrics, and Actuarial Science, will carefully review the submitted abstracts based on the quality, relevance, and innovation of the research. The top 3/4 submissions will be selected for presentation during our session at the conference.

Interested participants should submit their abstracts (maximum 300 words) along with their full name, university affiliation, and contact details to [hamza.hanbali@monash.edu](mailto:hamza.hanbali@monash.edu).

For inquiries or further information, please contact [hamza.hanbali@monash.edu](mailto:hamza.hanbali@monash.edu).

The panel members are:

Julie Cook (Associate of the Australian Actuaries Institute),

<https://research.monash.edu/en/persons/julie-cook>

Professor Catherine Forbes, <https://research.monash.edu/en/persons/catherine-forbes>

Associate Professor David Frazier, <https://research.monash.edu/en/persons/david-frazier>

**ORGANIZER:** Hamza Hanbali, Monash Business School  
**CHAIR:** Hamza Hanbali, Monash Business School

**SPONSOR:** Department of Econometrics and Business Statistics, Monash Business School





# Session Info



S9

October 10th, 06:30 - 07:00 UTC

## Empowering Insights: Celebrating Women in Statistics and Data Science

The three talks included in the Invited Session elaborate on (1) women statisticians' role and position in a national official statistics agency, in national statistical society, the NGOs, and in the academic sphere, using a Hungarian example; (2) women statisticians' position and inclusion in contemporary society, based on the comparison of involvement in research for European developing and developed countries; and (3) the position of women in Serbia's scientific research community, emphasizing trends and insights. Talk presentations are based on secondary data, mostly official statistics data, from either national statistical agencies, or international organizations such as Eurostat, UNESCO, and/or OECD, respectively, are used.

According to the first talk, as we meet women statisticians in all areas of the activities important in our lives, including the most diverse sciences as well, it is noticed that although the statistical definitions, principles, and methodologies are the same wherever they are applied, quite different operating rules apply to statistical institutions, national statistical society, central national bureau of official statistics, academia, and diverse NGO's. Examples of the organizations in Hungary will be given. An issue of women statisticians' position in leadership is stressed.

The second talk starts with the insight that women's participation in research increased substantially in the past few decades. However, a large statistical data gap remains. Further increase in the involvement of women in scientific research is crucial both for the development of the research and for the empowerment of women by increasing their role in society. There is no straightforward correlation between a country's wealth and its success in achieving gender parity. Therefore, the origins of the differences are more complex than is usually expected, which requires a more attentive study of the issue. The origins of the observed trends will be discussed, and possible ways of improvement of women's participation in research proposed.

The third talk highlights that gender equality in representation in the research community is an issue and question which has been attracting significant attention from various stakeholders. Many nations are striving to improve the level of women's representation in all aspects of society, the science research community being one of them. This talk aims to closely observe the scientific research community of Serbia in the period 2019 to 2021. The trend in women's representation in the scientific field and by position held is explored. After conducting the statistical analysis, the literature review will be conducted to detect which policies imposed led to the obtained results.

**ORGANIZER:** Sandeep Kumar, Central University of Haryana, Mahendragarh(India)

**CHAIR:** Manoj Kumar, University of Delhi, India

**SPONSOR:** Central University of Haryana, Mahendragarh(India)





# Speaker Bios

S9



**DR. ANURAG PATHAK**

Dr Ram Manohar Lohia Institute of Medical Sciences Lucknow

Dr. Anurag Pathak, Ph.D. – Statistics, his thrust area is Biostatistics, Bayesian Inference, Lifetime Modelling, and Ecological Modelling. Currently working as Assistant Professor cum Statistics Tutor at Dr. Ram Manohar Lohia Institute of Medical Sciences, Lucknow, Uttar Pradesh (India).

His total number of publications are 17 in reputed journals such as Taylor & Francis, Springer Nature, Elsevier, and many other national and international journals. His research fields are Biostatistics, Medical Statistics, Bayesian Inference, and Ecological Models.

Also, he is lifetime member of various societies such as Indian Society for Probability and Statistics (ISPS), Indian Public Health Association (IPHA), and Epidemiology Foundation of India (EFI).



**SANDEEP KUMAR**

Central University of Haryana, Mahendragarh(India)

Mr. Sandeep Kumar is pursuing a Ph.D. degree majoring in Bayesian Inference using Ecological Models from the Central University of Haryana, Mahendragarh (India). He is currently a Research Scholar at the Central University of Haryana, Mahendragarh (India).

He has published 5 plus publications (journal articles/books/book chapters/conference articles) in IEEE, Taylor & Francis, Springer Nature, Elsevier, Emerald, World Scientific, and many other national and international journals and conferences. His fields of research are Bayesian Inference and Ecological Models. Mr. Sandeep is a Life Member of the Indian Bayesian Society (IBS), Indian Statistical Institute (ISI), Kolkata (India), British Ecological Society (BES), and Indian Society of Industrial and Applied Mathematics. He has been a member of the organizing committee of a number of international and national conferences, seminars, and workshops.

He has received of travel funding offer, for the conference on stochastic processes to be held March 8-11, 2023, at the University of Arizona in Tucson, Arizona, USA.

Highest Qualification:

Master of Philosophy (M. Phil.), Full Time, in Statistics and a Data Science from, Chaudhary Charan Singh University, Meerut, India in 2019.





## **Sample Size Estimation for Epidemiological and Medical Studies**

*Anurag Pathak, Dr Ram Manohar Lohia Institute of Medical Sciences Lucknow*

The present work emphasizes the optimal sample size for a study that assures adequate power of the test to detect statistical significance. This plays an important step in research to design protocol. It determines the sufficient participants in a study that has optimal cost, time, and exposure. Sample size calculation depends on the study design, one sample and two samples and more, also having to measure the study variables. This paper explains in such circumstances and the basic principles of calculating sample size in medical and epidemiological studies.

## **Towards Empowering Data Sciences: Role of Bayesian Inference Using Ecological Models in Species Ecosystem Management**

*Sandeep Kumar, Central University of Haryana, Mahendragarh (India)*

Species ecosystem management plays a critical role in preserving biodiversity and ecosystem sustainability. In this talk, we look at how Bayesian inference can improve data-driven decision-making in species ecosystem management. Traditional ecological modeling approaches often struggle to accommodate complex interactions and uncertainty associated with species management. With its ability to integrate prior knowledge and spread uncertainty, Bayesian inference offers a promising alternative.



October 10th, 07:00 - 07:30 UTC

## A Simulation Study to Explore the Effect of Repeated Use of Individual Patient Data in a MAIC Adjusted Network Meta Analysis

**Background:** Population adjustment methods such as matching adjusted indirect comparison (MAIC) can be used to perform a network meta-analysis (NMA) for single-arm studies. During the estimation of relative effect estimates using multiple MAICs, the individual patient data (IPD) is used recurrently.

**Aim:** The goal of the simulation study is to assess the impact of using MAIC estimates, in both fixed effect and random effects NMA.

**Methods:** To assess MAIC in a larger network, a connected network of 10 studies was simulated and converted into single-arm studies to apply MAIC. The estimates from MAICs were used to perform an NMA. The discrepancy between connected NMA and MAIC-adjusted NMA gives the validity of using MAIC in a larger network. The simulation study evaluated the change in five factors which were sample size, correlation coefficient between covariates, strength of effect modification, strength of prognostic variable and between study overlap in a full factorial design.

**Results:** The major impact of performing an NMA with MAIC estimates was seen in the undercoverage for both fixed and random effects model. The empirical SE was greater than model SE for all data-generating mechanisms (DGM). The highest coverage was 78% and 90% for fixed and random effects NMA, respectively with high overlap of covariates. Coverage found to be slightly better when the correlation was high. Biases were low for high overlap scenarios and vice versa.

**Conclusion:** Low coverage was found to be the major consequence of performing MAIC adjusted NMA where independency between studies is violated due to repeated use of IPD from a particular study.

**ORGANIZER:** Sayantee Jana, Indian Institute of Technology Hyderabad and Nairanjana (Jan) Dasgupta, Washington State University

**CHAIR:** Sangeetha Sathaiah, Pfizer India

**SPONSOR:** CWS



# Speaker Bios

S10

**NAHID SULTANA**

Shahjalal University of Science &amp; Technology

I joined as a lecturer at Shahjalal University of Science & Technology in 2014. I was awarded VLIR scholarship and completed Masters in Biostatistics from the University of Hasselt, Belgium in 2018 with distinction. In 2020 I got a PhD with a scholarship from the University of Sheffield. Currently, I am a final year PhD student at the University of Sheffield. My PhD is on methods for estimating relative treatment effects with single-arm studies.



# Session Info



S11

October 10th, 07:30 - 08:30 UTC

## Young Researchers from India

This session showcases the research of young girl students in different stages of their PhDs working on statistics across different domains. India is a big and diverse country with citizens across different parts of the country speaking different languages. This is similar to the field of statistics, where statistical applications can be encountered in different domains including - government, manufacturing industry, pharmaceutical industry, e-commerce, marketing, ecology, finance, transport. The list is endless.

To showcase these diversities and encourage more young girls to pursue higher studies in statistics, we have organized a session with all girl students working on different aspects of statistical methods and applications in infectious diseases modelling, ecology and the manufacturing industry. The methods range from spatial statistics, machine learning, and reliability statistics. All speakers come from different backgrounds, speak different languages and work on different domains of statistics and very different areas of applications, with one common driving force - their love for research and love for statistics.

**ORGANIZER:** Sayantee Jana, Indian Institute of Technology Hyderabad

**CHAIR:** Sayantee Jana, Indian Institute of Technology Hyderabad

**SPONSOR:** IISA



# Speaker Bios

S11



**DR. HABIBA KHATUN**

National Institute of Technology Rourkela India

Dr. Habiba Khatun has a Ph.D. at the National Institute of Technology Rourkela, India. She has three publications in peer-reviewed journals and two book chapters. Her research interests are Hypothesis testing on parameters and functions of parameters, point and interval estimation using classical and Bayesian approaches, and statistical inference under equality restrictions using complete and censored samples. Outside of her studies she likes music, travelling, playing badminton.



**JYOTI PRAJAPATI**

Project fellow

<https://sites.google.com/view/jyoti-jagdish-prajapati/home>

Jyoti Prajapati is a PhD student in the Department of Mathematics at the Institute of Chemical Technology and a project fellow in the Agricultural and Ecological Research Unit, Biological Sciences Division, Indian Statistical Institute, Giridih. She is involved in Data Science research activities focusing on a better understanding of the biological invasion problems in India. She is working on the efficient use of machine learning techniques in building species distribution models. The work involves significant use of machine learning tools in R, Python, Geospatial Data Handling, and Spatial Statistics. She is currently working on data curation and data validation in the management of the ILORA database and automation of the pipeline using Python and R. She enjoys writing learning materials related to the Statistical Modelling of Species Distribution. Ecological Niche Modelling using Python: [https://github.com/prajapatijyoti23/SDM\\_2020](https://github.com/prajapatijyoti23/SDM_2020)



**PRIYANKA YADAV**

Indian Institute of Technology, Hyderabad

Priyanka is a PhD student of Statistics in the Department of Mathematics at the Indian Institute of Technology, Hyderabad. She holds an under-graduate degree and master's degree in Mathematics and Computing with a master's project in Statistics. During her project, she got strong interest in statistical modelling, and methodologies to extract meaningful insights from complex datasets. Now, as a doctoral student she focuses on exploring where statistics and the way things change over space and time come together. Her work involves Spatial, Spatio-temporal modelling through various Bayesian inference techniques including INLA, AGHQ and Variational Bayes for skewed datasets using R. Her work not only contributes to the academic advancement of the field but also has the power to bring new ideas to different industries. Outside of her studies, she likes to play kho-kho, morning walks and interact with people of different backgrounds to learn about new things.



### Testing Equality of Quantiles for Several Logistic Populations

*Habiba Khatun, National Institute of Technology Rourkela India*

In order to compare several independent populations, one of the novel methods described by the researchers is to test the equality of their quantiles. Previously, researchers have considered comparing quantiles for normal and exponential model setups. However, the datasets could be modeled using logistic distribution in some cases. In this study, we consider the problem of testing the equality of quantiles for several logistic populations. We obtained test procedures based on a computational approach, likelihood ratio, and parametric bootstrap approach to test the equality of several quantiles. A detailed simulation study is carried out to compare the sizes/powers of all the proposed tests. The simulation study reveals that all other tests attain the nominal level except the asymptotic likelihood ratio test. Finally, we illustrate the importance of our model problem using two real-life examples.

### Identification of realized niche shift of 106 Invasive Alien Plant Species with factors impacting predicted range expansion and stability: A case study using Indian Alien Flora

*Jyoti Prajapati, Project fellow*

India has various Invasive Alien Plants species (IAPS), which pose a major global threat and critically impact biodiversity, ecosystem services, and economic development. The rise of globalization and rapid biological adaptation of the species boost the likelihood of an emerging invasion. Thus, we aimed to determine IAPS in India to assist in planning and control efforts. In the study, the global occurrence dataset (GBIF, <https://www.gbif.org/>), Indian occurrence dataset (ILORA, <https://ilora2020.wixsite.com/ilora2020>), and corresponding bioclimatic variables of 106 IAPS were used to address our hypothesis on IAPS that a climatic niche shift has occurred between native and invasive ranges using the centroid shift, overlapping, unfilling, and expansion (COUE) framework. The biotic factors: growth form: herb, shrub, vine, tree, and graminoid; duration: annual and perennial; functional traits: specific leaf area ( $\text{mm}^2\text{mg}^{-1}$ ), Seed weight in gram and plant height in meters and the abiotic factors: Introduction pathways, primary uses types, major habitat types, minimum residence time (MRT) and biogeography: native range and naturalized ranges of species at continental and sub-continental level of each species were used to identify their effect size on niche conservatism. The leave one out cross validation (LOOCV) was performed on the seven regression models: Linear regression, Support vector machine regression, Multivariate Adaptive Regression Splines, Gradient boosting machine, Neural network, Random Forest, and Regression tree to evaluate unbiased

estimate of the model performance. The best model was selected based on the least test mean squared error (MSE) to identify the most affecting factors by evaluating the relative effect of factors on niche conservatism. Mediation analyses were conducted using structural equation modelling (SEM) method to investigate systematized pathways that explain the significant direct, indirect, and total effect of biotic and abiotic factors on niche conservatism. Our study revealed that most species have occupied most of their native niche in India. IAPS, with South America as its native range, is showing the highest expansion. With the marginal increase in MRT, range expansion was predicted to decrease exponentially, whereas range stability was predicted to increase exponentially. The factors' direct, indirect, and total effects were identified on niche conservatism. Given the factors with their significant effect on niche conservatism and the identified IAPS should be prioritized for management actions.

### Spatio-temporal Modelling for non-gaussian data

*Priyanka Priyanka, Indian Institute of Technology, Hyderabad*

Latent Gaussian model has varied statistical applications like generalized additive models, Spatial, Spatio-temporal, survival analysis, etc. There is abundant literature on approximating the posterior using Markov Chain Monte Carlo (MCMC), Integrated Nested Laplace Approximation (INLA), Adaptive Gaussian Hermite Quadrature (AGHQ) etc., however, all assume Normal distribution for the latent field. Quite often we come across practical problems like the human life cycle, average income distribution, rare diseases etc. that motivate us to consider skewed distributions or a wide class of distributions involving both symmetric and skewed ones. This motivates us to build a method for approximating the posterior by Skew Normal distribution using AGHQ. Since both AGHQ and INLA are approximation methods for approximating posterior. We will also explore the comparison between INLA and AGHQ for skewed data and will find out if AGHQ is computationally more efficient. Our analysis is followed by validation analysis using Monte Carlo simulations and finally implementation on on real data set on malaria mortality in India from Million deaths study (MDS) from 2004-13. All these Spatio-temporal models will be implanted using R.



# Session Info



S12

October 10th, 08:30 - 09:30 UTC

## Panel on Careers in Statistics and Data Science Across Academia, Government and Industry

Statistics and Data Science have a wide variety of applications across different disciplines. Statistical tools and methods are required across different domains and sectors to improve business and governance. Careers in Statistics and Data Science span across academia, government and different industrial sectors. We have invited panelists with successful careers across these sectors to share their journeys and advise students and recent graduates about these career options.

**ORGANIZER:** Sayantee Jana, Dept. of Mathematics, Indian Institute of Technology Hyderabad

**CHAIR:** Sayantee Jana, Dept. of Mathematics, Indian Institute of Technology Hyderabad

**SPONSOR:** IISA





# Speaker Bios

S12



**MONAMI MITRA**

Indian Statistical Services (ISS), Ministry of Statistical Planning and Inference

Ms. Monami Mitra belongs to 2010 batch of Indian Statistical Service. She completed her Masters in Statistics from University of Calcutta. Prior to that she had done her graduation from St. Xavier's College, Kolkata. She has worked in the Ministry of Statistics and Programme Implementation (MoSPI) for over a decade now and has dealt with NSS surveys like Household Consumption Expenditure, Social Consumption Surveys on Health and Education, Tourism, Unincorporated Enterprise Surveys etc. At present, she is holding the post of Director in Price Statistics Division, MoSPI. She is primarily responsible for work related to Consumer Price Index and International Comparison Programme, a worldwide statistical initiative to produce Purchasing Power Parities for the world's economies.



**PALLAB BHATTACHARYA**

Standard Chartered Bank

Currently working as Deputy to the Head of Analytics for Standard Chartered Bank, Singapore handling Retail banking analytics, insights and managing a campaign management team of 12 analysts across Singapore and India. Professionally, he has been a Retail banking Analytics Leader with a Masters in Statistics and comprehensive experience in Credit Card & Personal Loans and Credit Risk analytics in industries relating to BFSI and Market Research. Diverse professional experience in international settings across Thailand, Vietnam, Brunei. Have been conferred with CEO award thrice for outstanding Real-time analytics solutions and, for best analytics usecase by Asian Banker. Prior to this, he worked with Fullerton Financial Holdings and Barclays bank, India. Outstanding ML Model development, implementation, and monitoring with notable successes in programming languages like SAS, Python, R, Shell, and visualization tools like Tableau, PowerBI & MicroStrategy. Managed large, cross-functional and multicultural teams in the delivery of multiple concurrent projects. Experience in campaign management tools like Unica, Pega, Adobe and ML tools like Dataiku and Anaconda.

He is also a persuasive communicator who is highly proficient in building or maintaining strong relationships, engage internal and external stakeholders across all levels and capable of translating complex challenges into actionable outcomes.

<https://www.isb.edu/en/research-thought-leadership/faculty/faculty-directory/pallavi-basu.html>



**DR. PALLAVI BASU**

Indian School of Business

I am an Assistant Professor in the Operations Management area, teaching concepts and approaches in Statistics at ISB. My research interests include applications of statistics in finance, marketing, and other disciplines, high-dimensional statistical inference, large-scale multiple testing, and topics on causal inference. I am a member of the American Statistical Association, Institute of Mathematical Statistics, and International Indian Statistical Association. I received my Ph.D. (Business Administration and Statistics) from USC Marshall School of Business. I was a post-doctoral fellow at Tel Aviv University. I completed my undergrad and master's studies in Statistics (specializing in mathematical statistics and probability) from the Indian Statistical Institute (ISI, Kolkata). The Mathematical Research Impact Centric Support from the SERB, Government of India, funds part of my current research (2023-2026).



# Session Info



S13

October 10th, 09:30 - 10:00 UTC

## The Profound Impact of My Mentor on My Journey

Embark on an illuminating journey as Aqsa Abid presents a heartfelt tribute to the profound influence of Prof. Habibullah on her academic journey. With captivating insights, this presentation unveils how Prof. Habibullah's tireless dedication to women's education, groundbreaking innovations in statistical teaching, and global collaboration initiatives have reshaped Aqsa's educational path. Witness the power of mentorship that extends beyond academics, as Aqsa shares personal narratives of resilience, empowerment, and purpose instilled by Prof. Habibullah. Join us in celebrating a remarkable educator and ambassador whose impact resonates in every facet of Aqsa's journey, inspiring her to strive for excellence and contribute meaningfully to the world of education and beyond.

**ORGANIZER:** Saleha Naghmi, Kinnaird College For Women, Lahore, Pakistan

**CHAIR:** Sharqa Hashmi, Govt. Jinnah Associate College for Women, Mozang, Lahore

**SPONSOR:** PISTAR



# Speaker Bios

S13



AQSA ABID  
PISTAR

Aqsa Abid is a dedicated and highly skilled professional hailing from Lahore, Pakistan. With a strong educational foundation in Statistics, she holds a Bachelor of Applied Sciences degree from Kinnaird College for Women. Aqsa's academic journey has equipped her with an extensive toolkit of statistical knowledge, ranging from Probability Distribution to Regression Analysis.

During her tenure as an Assistant at Pak Institute of Statistical Training and Research (PISTAR), Aqsa exhibited exceptional organizational prowess by coordinating international training workshops and contributing to the success of the PISTAR International Training Program, particularly during the challenging COVID-19 pandemic.

A passionate advocate for statistical sciences, Aqsa has actively participated in conferences, workshops, and online sessions, enriching her expertise in data science and analysis. Her commitment to education extends to community service, where she creatively engaged with patients at Fountain House Rehabilitation Center.

Aqsa's proficiency in statistical computing tools along with her exceptional communication and analytical skills, make her a valuable asset in conveying complex statistical insights to diverse audiences. Her ability to lead and collaborate effectively in project teams underscores her dedication to excellence in her field. Aqsa Abid is a forward-thinking statistician poised to make significant contributions to the world of data analysis.



# Session Info

S14

October 10th, 10:00 - 11:00 UTC

## Estimating International Migration Flows with Administrative Data

Over 100m people arrive in the UK each year - and about 0.5% stay for 12 months or longer. The 12 month definition is important, as we then add those arrivals to our estimates of the size of the population. International migration is one of the drivers of population change (with births and deaths). Estimates of the population underpins much vital decision making, such as allocation of regional funding, vaccination, school provision etc. Migration is also an area where policy is closely scrutinised, so being able to understand what is happening is very important. The Office for National Statistics (ONS) moved away from using a survey to estimate migration after covid-19 forced a stop on data collection, and work to prove the use of admin data was successful. Our estimates are now produced using administrative data, mainly from visa and travel information, and interactions with the tax system.

This session will discuss four stream of work on this topic:

- applying the international Long-Term International Migrant definition to visa data
- using interactions with tax records to identify migrants
- how we can ensure asylum seekers are accurately counted in estimates
- exploring ways we can understand more about short term migrants, who spend less than 12 months in the UK

**ORGANIZER:** Melissa Randall, Office for National Statistics, UK

**CHAIR:** Melissa Randall, Office for National Statistics, UK

**SPONSOR:** Office for National Statistics, UK



# Speaker Bios

S14



ANNABELLE TYRRELL

Office for National Statistics, UK

I am a Senior Research Officer at the Office for National Statistics (ONS) currently working on the development of admin-based migration estimates. I have also previously worked in survey design and quality assurance.



KIM TURNER

Office for National Statistics, UK

I am a Senior Data Analyst at the Office for National Statistics (ONS). I have worked for ONS for several years, building up my experience and skills in producing demographic statistics for the public good.



JOSEPHINE ZUMPE

Office for National Statistics, UK

<https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/internationalmigration>

I am a senior social researcher at the Office of National Statistics (ONS). I have worked for ONS for over 20 years, building up my experience and skill in producing demographic statistics for the public good. Outside of work I am a keen gardener and reader (our house is overflowing with books). I live in the south of England, with my husband and teenage daughter.



RAJNI DHANDA

Office for National Statistics, UK

<https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/internationalmigration>

I am a Senior Data Analyst at the Office for National Statistics (ONS). I have worked for ONS for several years, building up my experience and skills in producing demographic statistics for the public good.



MELISSA RANDALL

Office for National Statistics, UK

<https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/internationalmigration>

I began my career in the private sector for an international brand consultancy. I studied Social Research Methods by distance learning and joined the UK Office for National Statistics shortly afterwards. I have worked mainly on censuses, population and migration. I have led projects on inclusive statistics, ensuring ONS can report on gender identity and sexual orientation. I led the analysis and methods team for the Covid Infection Survey for two years and now lead a variety of projects in migration, particularly around using administrative data, identifying the drivers of migration and investigating alternative ways to measure migration.



### **Applying the Long-Term International Migrant definition to visa data**

*Annabelle Tyrrell, Office for National Statistics, UK*

The UN definition of a long-term migrant is that they change their place of residence for 12 months or longer. Visa's issued, with information on whether someone arrives or not, gives us a really good indication of who has come to the UK, but more information is needed to understand who is a long-term migrant. This talk expands on what we see in visa data and how we apply rules and assumptions to get to an estimate of long-term international migration.

### **Using interactions with tax records to identify migrants**

*Kim Turner, Office for National Statistics, UK*

Tax records are one way to estimate the population of a country. This talk describes some of the challenges, limitations and techniques in using tax records to determine whether someone is present in the country, and identify those who arrive and leave.

### **Exploring ways we can understand more about short term migrants, who spend less than 12 months in the UK**

*Josephine Zumpe, Office for National Statistics, UK*

We increasingly see more dynamic movement and mobility of populations that are not covered in our long-term migration estimates. There is a strong demand for a broader range of estimates that encompasses the diversity of migration patterns. Statistics on flows of short-term temporary migrants are needed to better understand and plan for interim populations at a national and local level. Embracing the opportunities open to us, by using administrative data, we are investigating ways to gain insights into international mobility. This presentation explores the definition of a temporary migrant and explains our latest research to estimate short-term migration to and from the UK.

### **How we can ensure asylum seekers are accurately counted in estimates**

*Rajni Dhanda, Office for National Statistics, UK*

Although some asylum seekers will arrive via a visa route to the UK, many more won't. Trying to identify former asylum seekers in emigration data is also challenging. This talk describes the challenges and techniques used to give an accurate estimate of asylum seekers in migration estimates.





# Session Info



S15

October 10th, 11:00 - 12:00 UTC

## Change Starts with Awareness

Global awareness of gender imbalance has spiked in recent years, thanks largely to a series of high-profile social movements. However, it is not yet clear whether this groundswell of attention has resulted in much actual narrowing of the gender gap. At the current rate of change, achieving worldwide gender equality could take 100 years, according to last year's World Economic Forum estimates.

In and of itself, awareness of gender imbalance does not inevitably produce change where it counts: organisational policies and practices. However, with the intervention of dedicated and skilled ambassadors, it could give change initiatives the necessary momentum to create an organisational tipping point. We believe strongly that the advocacy itself should be gender-balanced – the fight for equality should not fall disproportionately on women's or men's shoulders. We also believe that awareness should be based on evidences coming from real data and spread to all levels of the civil society.

This session hosts recent findings obtained from surveys, that is evidence-based analyses on gender gap.

**ORGANIZER:** Francesca Greselin, University of Milano-Bicocca

**CHAIR:** Silvia Penati, University of Milano-Bicocca

**SPONSOR:** University of Milano-Bicocca



# Speaker Bios

S15



**PROF. FRANCESCA GRESELIN**

University of Milano-Bicocca

<https://www.unimib.it/francesca-greselin>

Francesca Greselin is associate professor of statistics at the University of Milano-Bicocca (with national full professor qualification, in 2019).

She authored about 40 peer-reviewed scientific works, published in international journals. She has been Visiting Fellow at the University of Western Ontario (Canada) and the University of Queensland (Australia). She is associated editor of Statistics and Computing and guest editor of Statistical Analysis and Data Mining. She is involved in several scientific committees of international journals and conferences.

Her research activity includes inequality measures, their properties, limit theorems and applications, also in the field of gender equality. A second research thread is focused on mixture models within the classification framework, with emphasis on robust methodologies for model estimation and clustering.



**ERIKA GRAMMATICA**

University of Milano-Bicocca

<https://en.unimib.it/erika-grammatica>

She has a master's degree in Statistical and Economic Sciences from the University of Milan-Bicocca. With the results obtained in her master's thesis she published a scientific article in which an approach was proposed to study the missing data present in social network data.

After her Master's Degree she worked as a Data Analyst and Consultant at a market research company in Milan mainly in the large-scale retail trade sector.

For several years she has been collaborating with the University of Milan-Bicocca as a tutor and trainer for the faculties of Statistics and Economics.

She is currently a research fellow at the University of Milan-Bicocca with the project title: "Quantitative analysis of gender dynamics at the University of Milan-Bicocca". She deals with addressing issues related to the gender gap present in various contexts such as: universities, schools, small and large businesses and the civil context with the aim of suggesting effective actions to those responsible for political decisions.



**PROF. MARIANGELA ZENGA**

University of Milano Bicocca

Mariangela Zenga is currently associate professor in Social Statistics at the University of Milano-Bicocca (Italy). She has more than 15 years working on research for various studies in Social Statistics and more than 15 years in professional teaching in these fields. She is on the scientific committee of the Bicocca Applied Statistics Center at Milano-Bicocca University. She collaborates with the Centre for Statistical Science and Operational Research in the School of Mathematics and Physics at Queen's University of Belfast (UK) since 2005. Her main research interests are in statistical methods for the evaluation of tourism services, healthcare systems, labour market, and educational systems (paying attention to the gender differences).

### **A new parametric approach to gender gap with application to EUSILC data in Poland and Italy**

*Francesca Greselin, University of Milano-Bicocca*

Real income distribution comparisons are of interest to policymakers across European countries. Nowadays, a crucial component of income inequality remains the discrepancy between men and women, often called the gender gap. Since the gender gap is related to the whole distribution of incomes in a population, popular single metrics are not adequate, and previous studies applied the relative distribution method, a non-parametric approach to the comparison of distributions. Here, we propose a parametric approach for estimating the relative distribution. Then we extend it to assess the impact of selected covariates—related to the personal characteristics of the samples—on the existing gender gap in both countries. In more detail, models for income were fitted to empirical data from Poland and Italy, from the European Survey of Income and Living Conditions (wave 2018). Afterward, their parameters were employed to obtain the estimates of relative distribution characteristics. The methods applied in the study turned out to be relevant to describe the gender gap over the entire income range. Finally, the results of the empirical analysis are discussed to reveal similarities and substantial differences between the countries.

### **Bridging the Gender Divide: An In-depth Comparative Analysis of Nations**

*Erika Grammatica, University of Milano-Bicocca*

This research delves into the intricate realm of the gender gap, utilizing a carefully curated selection of indicators across diverse countries. Our study aims to discern common trends by examining the dynamic evolution of gender disparities in different nations over time. Employing a temporal trajectory approach, we explore the transformation of gender divides, shedding light on the path toward greater gender equality worldwide.

### **Social Oocyte Freezing and Economic Decisions: Perspectives of Italian Women**

*Mariangela Zenga, University of Milano Bicocca*

This work aims to explore the interconnection between economic decisions and motherhood, specifically focusing on the aspects of savings, employment, and understanding social oocyte freezing. The study investigates how economic factors influence women's decisions regarding motherhood and their perceptions of social oocyte

freezing as a reproductive option. A comprehensive survey was conducted, collecting data from a diverse group of women who were at various stages of their reproductive journey. The survey included questions related to financial considerations, career aspirations, and the impact of motherhood on employment. Additionally, it explored participants' knowledge and attitudes towards social oocyte freezing, including their understanding of the procedure, perceived benefits, and concerns. The results shed light on the complex relationship between economic decisions and motherhood. Financial stability and career prospects emerged as key factors influencing women's decisions regarding the timing and feasibility of starting a family. The findings highlight the importance of considering the economic dimension in discussions around motherhood and reproductive choices.



# Session Info



S16

*October 10th, 12:00 - 13:00 UTC*

## Portuguese Contributions in Statistics and Data Science

In this session, we intend to pay tribute to two Portuguese statisticians who play an important role in their respective research areas and whose work has been recognized by their peers. The first speaker is a junior statistician who has received a scientific award for her research from the Portuguese Statistical Society (Soraia Pereira). The second speaker is a former president of the Portuguese Statistical Society (Maria Eduarda Silva).

**ORGANIZER:** Lígia Henriques-Rodrigues, University of Évora and CIMA , Évora, Portugal

**CHAIR:** Isabel Pereira, University of Aveiro

**SPONSOR:** SPE



# Speaker Bios

S16



**PROF. MARIA EDUARDA SILVA**

Faculty of Economics, University of Porto

<https://www.fep.up.pt/docentes/mesilva/>

Maria Eduarda Silva is an Associate Professor with habilitation at the Faculty of Economics, University of Porto. Currently, is President of the Pedagogical Council and Director of the Master in Data Analytics. She has over 30 years of teaching experience in Statistics at B.Sc., M.Sc. and Ph.D. levels, and has successfully advised 11 PhD students and more than 25 MSc students. Her research interests are centered on time series analysis, including time series of counts, censored time series, features for multivariate time series via complex networks, and applications ranging from nowcasting in official statistics to analysis of biomedical, environmental and geophysics signals. She has published extensively in international journals, has been involved as an organizer or a member of scientific committees of scientific meetings, and normally serves as a referee for international journals in the areas of statistics and applications. In the recent past, she also served as President of the Portuguese Statistical Society and as Analytics and General Secretary of the Federation of the National Statistical Societies.



**PROF. SORAIA PEREIRA**

Faculty of Sciences, University of Lisbon

<https://www.researchgate.net/profile/Soraia-Pereira-3>

Soraia Pereira is a researcher at CEAUL (Centre for Statistics and Applications, UL) since 2014, an Invited Assistant Professor at the Faculty of Sciences, University of Lisbon (UL), since 2022, and a member of the Portuguese Statistical Society since 2014. She has a PhD in Statistics (University of Lisbon, 2018), a degree in Mathematics (University of Porto, 2010), and one of her main areas of research is Spatial Statistics. She was awarded the Portuguese Statistical Society Prize 2018.





### Time series analysis via Complex Networks and other challenges

*Maria Eduarda Silva, Faculty of Economics, University of Porto*

Data observed at different points in time, time series, have become the norm rather than the exception, especially with the recent technological advances. In fact, large amounts of data indexed by time (and often by space as well) are becoming increasingly common in all areas of science and business. The analysis of time series leads to specific problems in all steps of the process, from collection, cleaning and visualization to statistical modelling and inference. An approach that is becoming popular for exploring and understanding structures and patterns and to identify unusual observations in these large sets of time series is feature based. This talk presents an overview of time series analysis in several areas. Additionally, introduces a new feature-based approach for time series analysis based on complex networks. This approach requires mapping the time series into complex networks (single or multilayer). The topological measures extracted from the resulting networks constitute a set of time series features. The approach is parameter-free, do not require data pre-processing and are applicable to any univariate or multivariate time series dataset.

### Spatial data is everywhere! How can we make use of it?

*Soraia Pereira, Researcher at CEAUL and Invited Assistant Professor at Faculty of Sciences, University of Lisbon*

In this talk, I will provide insights into how to interpret spatial data and use spatial statistical tools to address relevant questions in real-life scenarios. Specifically, I will elaborate on the three fundamental spatial methodologies: areal data models, spatial point process models, and geostatistical models. Furthermore, I will illustrate their practical applications through examples of Official Statistics, Ecology, and Health.



# Session Info



S17

*October 10th, 13:00 - 13:30 UTC*

## Data Analytics Consulting in Nigeria: Projects, Challenges, Solutions, and Lessons

I will share my insights and experiences as a Data Analytics Manager working with Deloitte in Nigeria. I will present two or three of my past projects as use cases to illustrate the practical applications and impacts of data analytics in various domains. I will also discuss the challenges I faced, the solutions I implemented, and the lessons I learned along the way.

**ORGANIZER:** Nairanjana (Jan) Dasgupta,  
Washington State University  
**CHAIR:** Jessica Kohlschmidt, The Ohio State  
University  
**SPONSOR:** CWS





# Speaker Bios

S17

**OLUWATOBI BLESSING OLAYIWOLA**

Deloitte

Blessing is a Data Analytics and AI Manager in the Risk Advisory division at Deloitte. She is highly detail-oriented and possesses vast experience in Business Intelligence (BI), big data analytics and database management. Blessing has successfully led various BI projects aimed at providing actionable insights for decision-making across different management levels for clients across West and Central Africa. She has also worked on several machine-learning projects.

Blessing is a member of Deloitte's GenAI Practice in Africa and has extensive knowledge in working with various cloud architectures, as well as several programming tools/languages.

Furthermore, she has significant experience in both training and development. Blessing is actively involved in providing data analytics support on external audit engagements and has worked with various teams across different functions on several data analytics and technology audit engagements.



# Session Info



S18

*October 10th, 13:30 - 14:00 UTC*

## Aspects of Biplots in Multidimensional Visualization

Biplots are considered as extensions of the ordinary scatterplot by providing for more than three variables, which become useful in visualizing high-dimensional data. It is an approximation of multidimensional scatterplots into a single plot, where information of both samples and variables are displayed. The Principal Component Analysis biplot is one of the basic biplots, that uses the singular value decomposition as an approximation to a data set. A biplot is predictive if information on variables are added in such a way that it allows the values of the variables to be estimated for points in the biplot. This presentation will look into the fundamental principles of constructing biplots and provide interesting examples of their practical applications and extensions in research.

**ORGANIZER:** Nairanjana (Jan) Dasgupta,  
Washington State University  
**CHAIR:** Star Aduratomì Oje, Washington State  
University  
**SPONSOR:** CWS



# Speaker Bios

S18



**DR. RAEESA GANEY**  
University of the Witwatersrand

Raeesa Ganey completed her BSc at the North-West University in Potchefstroom in 2011. She then began her postgraduate studies in Statistics at UCT where she completed a BComm Honours in 2012, MSc in 2014 and PhD in 2019. Raeesa's research are in the methods of Multivariate Data Analysis and Visualization techniques. Her PhD looked at constructing a Principal Surface Biplot. The biplot allows for the visualization of objects together with the variables or characteristics that were observed. She extended the methodology to allow for accurate representation of nonlinearity in data, which is often a truer reflection of reality. The methodology allows applied researchers to visualize their complicated high dimensional data and reveals interesting data features. Raeesa recently became a formal collaborator to a high dimensional visualization project in the Department of Statistics and Actuarial Science at Stellenbosch University. Raeesa has been employed as a Statistics Lecturer in the School of Statistics and Actuarial Science at the University of Witwatersrand since 2015. Once she completed her PhD, Raeesa started to play more of a leading role in her department, introducing a new course in multivariate data analysis at third year level. She now lectures Multivariate Data Analysis to both third and fourth year (Honours) statistics and actuarial science students.



# Session Info



S19

October 10th, 14:00 - 15:00 UTC

## Statistical Models for Conservation Translocations

Collaborative work with: Katie Bickerton (University of Kent), Fay Frost (Lancaster University), Stefano Canessa (Bern University), John Ewen (ZSL)

Conservation translocations are being increasingly used in the conservation of threatened species and as part of ecological restoration programmes.). Robust estimates of abundance are essential for meaningful conservation decision-making and the impact of translocations on source populations needs to be understood. Within this talk I will present a new capture-recapture model for translocated populations and will then present a modelling framework where capture-recapture is combined with removal/depletion methodology. I will demonstrate that an exact likelihood is possible when individual level information is available, and I will show how a standard integrated population modelling approach, which assumes independence between component data sets, can be adapted to provide an approximate likelihood when individual level data is not available. This approach, as well as providing a valuable tool for estimating the abundance of source populations post translocation, also motivates a new direction of research for overcoming issues of dependence of data within a standard integrated population modelling framework.

**ORGANIZER:** Altea Lorenzo-Arribas, BioSS

**CHAIR:** Esther Jones, BioSS

**SPONSOR:** Biomathematics and Statistics Scotland (BioSS)



# Speaker Bios

S19



PROF. RACHEL MCCREA  
Lancaster University

<https://www.lancaster.ac.uk/sci-tech/about-us/people/rachel-mccrea>

Professor Rachel McCrea holds a Chair in Statistics in the Department of Mathematics and Statistics at Lancaster University. She is the Director of the National Centre for Statistical Ecology and a Fellow of the Learned Society of Wales. Much of Rachel's research has been motivated by a desire to reliably inform conservation strategies, which often requires estimation of population sizes for difficult to count species. In particular, she has developed a number of new statistical approaches for the modelling of capture-recapture data and has developed new methods for model selection and goodness-of-fit, work for which she was awarded the RSS Guy Medal in Bronze.



# Session Info



S20

October 10th, 15:00 - 16:00 UTC

## Women and Big Telescopes

An international alliance of statistical association presidents biennially presents the Elizabeth L. Scott Award and Lecture at one of the world's largest gatherings of statisticians and data scientists. It is fitting to also celebrate Elizabeth L. Scott (1917-1988) on this International Day of Women in Statistics and Data Science because she was iconically both a brilliant statistical scientist and a superb advocate for academic women. Scott was a frequent speaker at women in science meetings to rally support for increasing opportunities for women and to increase the representation of women in STEM disciplines. Her evidence-based story about women not being allowed to use big telescopes and fully participate in the discovery of the wonders of the universe is illustrative of the many problems faced by professional women both in her time and today.

**ORGANIZER:** Altea Lorenzo-Arribas, BioSS

**CHAIR:** Cecilia Lanata-Briones, University of Warwick

**SPONSOR:** Royal Statistical Society History of Statistics Section



# Speaker Bios

S20



DR. AMANDA GOLBECK

University of Arkansas for Medical Sciences

Amanda L. Golbeck is a statistician, social scientist, and academic leader. She received her PhD from the University of California-Berkeley and is currently Professor of Biostatistics and Associate Dean for Academic Affairs in the Fay W. Boozman College of Public Health at the University of Arkansas for Medical Sciences. She is also currently Professor Emerita in the Department of Mathematics and Statistics at San Diego State University. She is a Fellow of the American Statistical Association, an Elected Member of the International Statistical Institute, a past-president of the Caucus for Women in Statistics, and a former Fulbright Specialist to the University of Latvia at Riga. Golbeck received a Grinnell College Alumni Award. She is known for her authored book "Equivalence: Elizabeth L. Scott at Berkeley"; and for her edited books "Leadership and Women in Statistics" (with I. Olkin and Y. Gel); and "Leadership in Statistics and Data Science: Planning for Inclusive Excellence". Golbeck was selected in 2016 to receive the Committee of Presidents of Statistical Societies Elizabeth L. Scott Award. Golbeck (with C. Molgaard) has a forthcoming authored book, "Florence Nightingale David: A Passionate Statistician, Probabilist, Historian, and Leader", to be published by Springer.





# Session Info



S21

*October 10th, 16:00 - 17:00 UTC*

## The Role of Creativity and Innovation in Statistics and Data Science

This session will explore life as a statistician, programmer, or data scientist beyond the academic lens. Our speakers from industry will discuss how they use creativity, curiosity, and innovation to explore data and projects. This includes creative approaches to client problems, coding, teamwork, our processes, and analyses. These speakers have various points of view, stemming from their varied backgrounds and career phases. The discussant will tie their points together and provide tailored tactics that we may try in our own work lives

**ORGANIZER:** Cynthia Bland, RTI International

**CHAIR:** Cynthia Bland, RTI International

**SPONSOR:** CWS



# Speaker Bios

S21



RENEE TEATE

HelioCampus

Renee Teate is the Senior Director of Data Science at HelioCampus, a higher ed tech startup, and the author of the Wiley book SQL for Data Scientists. She was also the creator of the Becoming a Data Scientist podcast and learning community on twitter, where you may know her as @becomingdatasci or "Data Science Renee".



SONALI GARG

Imago BioSciences

Accomplished statistical programming leader with experience in data standards strategy and governance, for leading biotech companies and Contract Research Organizations. Expertise in the clinical drug development life cycle, multiple therapeutic areas, including rare diseases, ophthalmology, transplant, oncology, infectious disease, epilepsy, cardiovascular, diabetes, gastrointestinal as well as medical devices. Visionary, innovative, results-orientated and enthusiastic problem solver, operating in a fast-paced environment. Highly collaborative and creative talent leader. Well versed in all phases of randomized clinical trials. Thorough knowledge of GCP, ICH and CFR Part 11 guidelines. Have an MPH in Biostatistics from UNC Chapel Hill and Bachelor degree in Statistics from India.

<http://www.rti.org/>


PHILIP LEE

RTI

Philip Lee is a Research Statistician who has been a valued member of the National Incident Based Reporting System (NIBRS) project since 2018 spending countless hours setting up and problem solving processes written in an open source language, R, he learned for the task. He joined RTI in 2013 and has also worked on National Survey Drug Use and Health (NSDUH), National Survey of Child and Adolescent Well-Being (NSCAW), and National Ambulatory Medical Care Survey (NAMCS). He is a highly skilled programmer in both SAS and R and serves as a go-to for many staff on hard programming problems.



CYNTHIA BLAND

RTI International

Cynthia Bland directs the Center for Official Statistics at RTI International, a non-profit research firm specializing in government contracting. In her 20 years at RTI, she has designed and analyzed national surveys and is skilled in sample design and selection, complex weighting, statistical programming, data analysis, and reporting. She is certified in project management and leads multidisciplinary teams to produce high-quality outcomes. Cynthia leads a center of more than 80 statisticians as they innovate for clients and grow in their own careers.

Cynthia serves as the President-Elect for the Caucus for Women in Statistics. She has been active with the NC Chapter of the American Statistical Association and is a lecturer in statistics for the Kenan-Flagler School of Business at the University of North Carolina at Chapel Hill. Outside of the statistical world, Ms. Bland serves on the board of a local credit union and as a national vice president in her sorority.



### Curiosity, Creativity, and Communication in the Practice of Data Science

*Renee Teate, HelioCampus*

You may have heard of the early data science venn diagram that combines mathematics, computer science, and domain expertise. In this talk, Renee will discuss an alternative data science venn diagram, intersecting communication, curiosity, and creative problem solving.

demographic groupings, 14 two-way combination of gender and race, and 42 three-way combination of gender, race, and age. In this presentation, discussion includes the challenges of working with large datasets and how the team handles a tenfold increase of the amount of estimates produced in 2021 to 2022 production year.

### Creativity Opportunities in Randomized Clinical Trials

*Sonali Garg, Imago BioSciences*

In the world of Randomized Clinical Trials, for the process of drug development, Statisticians, Statistical programmers and Data managers are one of the key personnel in. Starting from the application for an Investigational New Drug(IND) and setup of the electronic Case Record Forms(eCRFs) till the final delivery of the data package to regulators for New Drug Applications(NDAs). Statistical programmers in the pharmaceutical industry help put together the data insights meaningfully so the stories are conveyed well through data. This presentation mainly revolves around the roles and responsibilities of statistical programmers in the pharmaceutical industry. And how programmers can help the cause of bringing life-saving medicine to patients, where they interact with Cross-functional teams and act as a bridge between Data managers and Statisticians.

### Innovations in NIBRS Estimation

*Philip Lee, RTI*

The National Incident-Based Reporting System (NIBRS) is used by law enforcement agencies for collecting and reporting a variety of data on each crime incident known to the police. With over 12,000 agencies reporting millions of crimes each year, this is a big administrative data set with over 40 tables. The various tables can be joined together to produce very granular and specific estimates, such as victim, offender, arrestee, offenses, and incident characteristics. Given the abundance of information that NIBRS collects, estimates can be produced at various geographic and demographic levels. For geographic levels, estimates can be produced at the national level as well as 4 regions, 50 states plus D.C., 384 MSAs, 90 Judicial Districts, and 55 Field Offices. In addition to geographic levels, certain tables, such as victim and arrestee, that contains demographic information, estimates can be produced by different levels of age, gender, and race groupings. These demographic levels include 27 single

# Session Info

S22

October 10th, 16:00 - 17:00 UTC

## Collaborating as a Woman in Statistics

Women in the workplace experience higher rates of introversion and impostor syndrome than their male counterparts which can make it difficult to be confident and assertive when working with others. As statisticians who often participate in interdisciplinary and applied work, female statisticians may face some challenges that their male counterparts would not have faced when collaborating with other researchers. What are the challenges and how to overcome them?

"Dr Elinor Jones (University College London), Lucia Barbone (Office for National Statistics), and Dr Kelly Zou (Viatrix) will take part in a panel discussing:

- their experiences of collaborating with others and some difficulties they have faced in their career
- how other collaborators may view male and female statisticians differently
- any found differences between collaborating with researchers, stakeholders and others as women in statistics
- techniques and habits that help them to feel confident when working with others

**ORGANIZER:** Brittany Black, Civil Service Fast Stream/YSS Committee

**CHAIR:** Brittany Black, Civil Service Fast Stream/YSS Committee

**SPONSOR:** RSS Young Statisticians Section



# Speaker Bios

S22



**DR. ELINOR JONES**

University College London

Elinor graduated in Mathematics and Statistics from the University of Warwick before completing a PhD in Probability Theory at the University of Manchester. Her thesis examined the large deviations of random walks and Lévy processes. Prior to joining UCL, Elinor worked as a Research Associate in Genetic Epidemiology at the University of Leicester and as a Statistician at the University of Reading. Her research interests include inferring causality from observational epidemiological data, federated analysis of data when data cannot be pooled, and statistics education.



**DR. LUCIA BARBONE**

UK Office for National Statistics

Lucia Barbone, PhD, from the UK Office for National Statistics, leads the Best Practice Assurance & Improvement team (part of the Methodology and Quality Directorate), supporting ONS colleagues in managing risks to quality and applying best practice. Lucia has worked at ONS since 2020, having worked in a range of roles and industries before, including academia, consultancy, and international development, and has a strong technical background in data analysis and economics. Lucia is a quality of data & analysis enthusiast, and she is passionate about translating ideas for improvement into action, in a way that adds value and has impact.



**DR. KELLY ZOU**

Viatrix

Kelly H. Zou, Ph.D., PStat® is Head of Global Medical Analytics and Real World Evidence, Viatrix Inc. She is an elected Fellow of the American Statistical Association and an Accredited Professional Statistician. Previously at Pfizer Inc, she was Vice President and Head of Medical Analytics & Insights; Senior Director of Real World Evidence, Group Lead of Methods & Algorithms and Analytic Science Lead; Senior Director of Statistics. She was Associate Professor of Radiology at Harvard Medical School, and Director of Biostatistics at its affiliated teaching hospitals. She received both MA and PhD degrees in Statistics from the University of Rochester. She completed her Postdoctoral Fellowship at Harvard. Her research interests include health policy, real world evidence, signal detection, and artificial intelligence, with over 150 professional articles and 5 books. She was featured as an Outstanding Woman in Data Analytics by Forbes, an Inspirational Women in Statistics & Data Science by Wiley, and an Accomplished Woman in Statistics and Data Science by the American Statistical Association. She won the Chief Data and Analytics Officers' Forum's Future Thinking Award and Reuters Events Pharma USA's Most Valuable Data & Insights Initiative Team Award. She is on the editorial board of Significance magazine.



# Session Info

S23

October 10th, 17:00 - 18:00 UTC

## Journey of Early Career Women in the Pharmaceutical Industry and Their Paths Forward

Early career women in the pharmaceutical industry are making significant strides and contributing to advancements in healthcare, research, and development. With their passion for science and a desire to improve people's lives, these women are forging a path of innovation and progress in this critical sector. The pharmaceutical industry has traditionally been male-dominated, but today, more women are entering the field and making their mark. These early career women are bringing fresh perspectives, diverse skills, and a commitment to excellence, enriching the industry with their unique contributions. One of the notable strengths of early career women in the pharmaceutical industry is their dedication to scientific research and discovery. They possess a deep curiosity and a thirst for knowledge, which fuels their pursuit of breakthroughs in drug development, clinical trials, and medical treatments. Their commitment to evidence-based practices and attention to detail play a crucial role in ensuring the safety and efficacy of new therapies. Early career women in the pharmaceutical industry are often at the forefront of cutting-edge technologies and advancements. They embrace digital health, artificial intelligence, and data analytics to enhance drug discovery processes, optimize clinical trials, and improve patient outcomes. By leveraging these innovative tools, they are accelerating the pace of research and development, bringing new treatments to market more efficiently.

Furthermore, early career women in the pharmaceutical industry display exceptional teamwork and collaboration skills. They recognize the value of interdisciplinary collaboration, working closely with scientists, clinicians, regulatory experts, and other professionals to bring new drugs and therapies to patients with unmet medical needs. Their ability to build strong partnerships and foster open communication enhances the collective expertise of teams and drives progress. These women also bring a unique perspective to healthcare research and development. They understand the importance of gender and diversity considerations in clinical trials and drug development, advocating for more representative study populations and personalized medicine approaches. Their insights contribute to creating more inclusive healthcare solutions that address the specific needs of diverse patient populations. As early career women in the pharmaceutical industry advance in their careers, they become influential leaders and mentors for future generations. They break down barriers, challenge gender biases, and inspire other women to pursue careers in pharmaceuticals. By advocating for gender equity, supporting diversity initiatives, and driving cultural change, these women are shaping a more inclusive industry for the future.

In conclusion, early career women in the pharmaceutical industry are making a profound impact on healthcare and research. Their scientific expertise, commitment to innovation, collaboration, and advocacy for diversity are transforming the industry. As they continue to advance and take on leadership roles, they will undoubtedly contribute to groundbreaking discoveries and advancements that improve the lives of countless individuals around the world.

**ORGANIZER:** Arinjita Bhattacharyya, Merck

**CHAIR:** Arinjita Bhattacharyya, Merck

**SPONSOR:** Merck/CWS





# Speaker Bios

S23

<https://www.linkedin.com/in/dootroy/>


**DR. DOOTI ROY**  
Boehringer Ingelheim Pharmaceuticals Inc.

As the Director of Global Biostatistics and Data Sciences at Boehringer Ingelheim, I lead a team of talented statisticians and data scientists who develop and implement cutting-edge clinical research and statistical visualization tools. I have more than 8 years of experience in the biopharmaceutical industry, where I have successfully created and led numerous cross-functional collaborations to solve complex problems and deliver high-quality results.

My current research focus is on the applications of Bayesian statistics, artificial intelligence, and machine learning in drug development, which I believe are the key drivers of innovation and efficiency in this field. I also have an adjunct faculty appointment at the University of Connecticut, where I teach a unique summer program that I designed to introduce students to the essential biostatistical topics needed as a clinical trialist. I am passionate about sharing my knowledge and expertise with the next generation of statisticians and data scientists. I am voluntarily involved in numerous organizations to pay forward and to mentor the next generations of data enthusiasts.



**HIYA BANERJEE**  
Eli Lilly

Ms Hiya Banerjee works as a Director of Biostatistics at Eli Lilly and Company. She has worked 9 years in Novartis prior to joining at Eli Lilly. She holds a PhD in statistics and a MBA degree. Her expertise is in drug development in Oncology and Diabetes Therapeutic areas.

She is actively involved in International Indian Statistical Society and Biopharmaceutical Section of American Statistical Association. She is the publication officer of the Biopharmaceutical Section. She enjoys running, working out and painting.



**DR. BHRAMORI BANERJEE**  
Merck

My name is Bhramori Banerjee and I have been at Merck for a little over two years. Previous to joining at Merck I have worked in many pharmaceutical companies as well as CROs (like GSK, Novartis, Celgene, Luye and IQVIA ) in different capacities for 11 years. I have completed my Ph.D. in Temple University under Dr. Sarkar and did my internship at Merck during my tenure as a student at Temple University. I have also worked at Educational Testing Services as SAS programmer before I started my Ph.D.



**DR. ARINJITA BHATTACHARYYA**  
Merck

Dr. Arinjita Bhattacharyya is a Ph.D. graduate in Biostatistics from the University of Louisville, KY. She is currently a Senior Scientist at the Biostatistics and Research Decision Sciences (BARDS) in Merck & Co., Inc. She has completed her bachelor's and master's in Statistics from the University of Calcutta, and the University of Pune, India, respectively. She received the Graduate Dean's Citation award and Doctoral Dissertation Completion award and has internship experiences at Janssen Pharmaceuticals and the University of Michigan.

Arinjita currently supports Phase 1 clinical trials and is involved in designing clinical trials and writing study protocols and reports. Her daily life includes researching and implementing statistical methods in discovering and developing new therapeutic options for patients with unmet medical needs. Her primary research interests are clinical trials, Covid-19, HIV, mental health, oncology, shrinkage priors, prediction, methods for omics data, subgroup analysis, and dose-response models (Google Scholar).

She loves to make new connections, mentor students, and is actively involved with ASA, JEDI, CAUSE, IISA, and ENAR CENS.



**Chasing Science, Passion, and Heart: A statistician's journey into drug development***Dooti Roy, Boehringer Ingelheim Pharmaceuticals Inc.*

Dooti Roy is a Director of Global Biostatistics and Data Sciences at Boehringer Ingelheim Pharmaceuticals Inc, USA, and an adjunct professor at the University of Connecticut. Throughout her journey, she has chased scientific solutions with passion and sought out people with heart to create and achieve together. She has a deep passion for developing innovative biostatistical research and for developing people. In this presentation, she will share her story of how she pursued her scientific interests and career goals, from obtaining a PhD in Statistics at UConn to becoming a methodology statistician, a global product owner, and then a people leader at Boehringer Ingelheim. She will also showcase some of the cutting-edge projects and collaborations that she has led, driven by a sense of creating impact and value for the organization with firm focus on effective design, analyses, inferential and predictive tools available to a clinical data scientist. She will also talk about her teaching experience at UConn, where she designed and continues to deliver a unique summer program that introduces students to off-the-books biostatistical topics needed as a clinical trialist. She will conclude with some lessons learned and tips for aspiring biostatisticians and data scientists who want to make an impact in the pharmaceutical industry.

**Wearing Many Hats in Career Development: Navigating Challenges and Maximizing Growth***Hiya Banerjee, Eli Lilly*

Wearing many hats in the workplace is a dynamic and multifaceted experience that often leads to both personal and professional growth, accompanied by its fair share of challenges. Juggling multiple roles and responsibilities within and outside of an organization allows us to expand the skillsets and gain a broader understanding of the business landscape. Ultimately, the journey of wearing many hats is a rewarding one, as it equipped me with a diverse set of competencies while navigating the complexities of the modern workplace.

**Thinking like a Statistician***Bhramori Banerjee, Merck*

Journey of a statistician in the pharmaceutical industry during the early career years can be challenging. In this talk we will discuss a few examples which will bring out the challenges in this industry and how to put on a statistician's hat while trying to solve them.

**Life in Pharma through the Eyes of an Early Career Professional***Arinjita Bhattacharyya, Merck*

The accelerated development of therapeutics and vaccines to combat the deadly Covid-19 pandemic has made the world even more aware of the significant contribution of statisticians and data scientists in designing the clinical trials, analyzing data and interpreting and reporting the findings. Statisticians have played a pivotal role in the development of therapeutics and vaccines to address this public health crisis. The daily life of a statistician supporting non-clinical studies such as HIV, oncology, pain, covid-19 areas in the pharmaceutical industry involves designing complex clinical experiments, developing novel statistical methodologies and tools, implementing new techniques, collaborating with clinical scientists, analyzing data and interpreting results. Through this mentoring session, you will get a snapshot of the life of an early career statistician in pharma and gain knowledge about the roles and responsibilities, day-to-day projects, and effective skills that will help students and professionals early on in their career and help to understand about procuring internships and full-time employment opportunities. It will provide an opportunity to learn from the personal experiences. This talk aims to help quantitative talents explore the world of pharma and navigate through the unknowns from the lens of an early career professional.



# Session Info



S24

*October 10th, 17:00 - 18:00 UTC*

## Junior Advances in Bayesian Methods for Complex Data

Complex data are routinely collected in several fields of study, motivating the development of novel statistical tools to answer applied questions. Bayesian methods offer an appealing approach for describing the probabilistic generative mechanism underlying high-dimensional or complex random variables.

This session gathers contributions from early-career Bayesian researchers, covering a broad range of topics and methodological and computational challenges. These range from modelling genomic data for cancer screening, dimensionality reduction and clustering of high-dimensional data, parameter estimation in complex dynamical systems, and Bayesian neural-networks.

This session is organised by j-ISBA, the “junior” section of the International Society for Bayesian Analysis (ISBA). One of j-ISBA main goals is to promote the work of early career Bayesian researchers while facilitating connection and confrontation with more experienced researchers.

**ORGANIZER:** Cecilia Balocchi, University of Edinburgh

**CHAIR:** Cecilia Balocchi, University of Edinburgh

**SPONSOR:** j-ISBA



# Speaker Bios

S24



SALLY PAGANIN

The Ohio State University

<https://salleuska.github.io/>

Sally Paganin is an Assistant Professor in the Department of Statistics at The Ohio State University. She is originally from Italy and received her Ph.D. in Statistical Sciences from the University of Padova (2019). Her research focuses on developing Bayesian methods and models for the analysis of complex data, with a focus on Bayesian nonparametrics, models for latent variables, and model assessment. She is also interested in the development of open-source statistical software, and she is an active collaborator to the nimble project (<https://r-nimble.org>), an R-based software for hierarchical models.



MARGARITA GRUSHANINA

Vienna University of Economics and Business

<https://margotgrush.github.io/>

I have just completed my PhD in Econometrics and Statistics at the Vienna University of Economics and Business under the supervision of Sylvia Frühwirth-Schnatter. My dissertation is devoted to developing Bayesian methods for unsupervised data analysis of complex data sets. My research interests include mixture models, Bayesian latent factor models, Bayesian nonparametrics and hierarchical modelling. Parallel to my PhD, I have also been working as a quant at Erste Group, being responsible for macroeconomic modelling and forecasting.



DR. MARIYA MAMAJIWALA

The University of Sheffield

Mariya Mamajiwala is a Research Associate in the Department of Computer Science at the University of Sheffield since 2022. Additionally, she serves as an affiliate researcher at King's College London. Currently, she is actively engaged in research as part of the EPSRC-funded project titled 'In-Procedure Personalized Atrial Digital Twin to Predict Atrial Fibrillation Ablation Outcome.' Mariya received her PhD from the Department of Statistical Science at University College London in early 2023. Her doctoral research spanned a diverse range of subjects, including non-convex optimisation, Markov chain Monte Carlo techniques, stochastic optimal control, and system identification via data assimilation. She holds a Master of Engineering (M.E.) degree in Civil Engineering from the Indian Institute of Science. Beyond her experience in Bayesian methods, Mariya's research interests encompass the nexus of Monte Carlo methods, Riemannian differential geometry, and stochastic differential equations.



DR. MARIIA VLADIMIROVA

Criteo AI Lab

Mariia is a research scientist at Criteo AI Lab based in Paris and Grenoble, France. Her research mostly focuses on explaining and improving machine learning methods with the instruments of Bayesian and causal statistics. Recent works include insights into connection between Bayesian and standard neural networks, fairness assessment in recommendation systems, policy allocation in multi-treatment causal problems under budget constraints. Mariia obtained her PhD in applied mathematics at the University of Grenoble and Inria research center in 2022.



**A Bayesian framework for early cancer screening***Sally Paganin, The Ohio State University*

There is a growing interest in the development of tools for cancer screening and monitoring using DNA sequencing data from non-invasive procedures, such as blood samples. These early-stage cancer samples typically contain DNA from mostly normal cells with a low fraction of tumor cells. Cancer presence can be assessed by measuring allelic imbalance: since a person inherits one allele from each parent, the allele proportion at heterozygous loci is close to 0.5 in normal cells, whereas significant deviations from 0.5 are indicative of the presence of cancer. We present a novel Bayesian framework for estimation and testing of allele proportions over the genome. Our framework builds on a Hidden Markov Model to account for dependence between genomic positions, spike and slab priors for detecting significant deviations from 0.5, and the use of biological information.

**Dynamic mixture of finite mixtures of factor analysers with automatic inference on the number of clusters and factors***Margarita Grushanina, Vienna University of Economics and Business*

Mixtures of factor analysers (MFA) models represent a popular tool for finding structure in data, in particular of high dimension. While in most applications the number of clusters, and especially the number of latent factors within clusters, is assumed to be fixed, in the recent literature models with automatic inference on both the number of clusters and latent factors have been introduced. The automatic inference is usually done by assigning a nonparametric prior and allowing the number of clusters and factors to potentially go to infinity. MCMC estimation is performed via an adaptive algorithm, in which the parameters associated with the redundant factors are discarded as the chain moves. The current work contributes to the MFA literature by providing for the automatic inference on the number of clusters and the number of cluster-specific factors while keeping both cluster and factor dimensions finite. For the automatic inference on the cluster structure, we employ the dynamic mixture of finite mixtures (MFM) model with a prior on the number of mixture components. Automatic inference on cluster-specific factors is performed by assigning an exchangeable shrinkage process (ESP) prior to the columns of the factor loading matrices. MCMC estimation is performed through telescoping sampling. Extensive simulation studies as well as applications to benchmark data sets and time series data of Eurozone inflation rates demonstrate the model's comparative advantages. These include reducing the computational burden linked to the density estimations in the classification step, eliminating the estimation bias coming from discarding the redundant factors and their parameters, and obliterating the need of often subjective truncation criteria used in the adaptive infinite factor MCMC algorithms.

**Efficient parameter estimation via data assimilation: a modified parameter dynamics***Mariya Mamajiwala, The University of Sheffield*

In the context of dynamical system modelling and the presence of incomplete and noisy measurement data, data assimilation methods are employed to estimate the states of the dynamical system, while accounting for uncertainties inherent in both the modelling and measurements. When dealing with unknown parameters in addition to the system states, conventionally, they are treated as supplementary states evolving as Brownian motion. However, the applicability of this approach may be limited, particularly when the system's behaviour is highly sensitive to these parameters, as is the case in chaotic systems. In this research, we introduce a novel methodology for parameter estimation within the framework of data assimilation. Specifically, this is accomplished by introducing a Langevin diffusion process to describe the evolution of parameters. In contrast to the conventional Brownian motion, our approach leverages information from the system dynamics, the dynamics of measurements, and available measurement data. Consequently, it offers valuable directional guidance for parameter evolution. A notable advantage of this proposed methodology lies in its versatility, seamlessly integrating with various data assimilation techniques. Through numerical examples, we demonstrate the significant improvement in speed, accuracy and robustness of our approach compared to the conventional use of Brownian motion, illustrating its potential for enhancing parameter estimation in dynamical systems.

**Distributional properties of Bayesian neural networks***Mariia Vladimirova, Criteo AI Lab*

Neural networks have achieved remarkable performance across various problem domains, but their widespread applicability is hindered by inherent limitations such as overconfidence in predictions, lack of interpretability, and vulnerability to adversarial attacks. To address these challenges, Bayesian neural networks (BNNs) have emerged as a compelling extension of conventional neural networks, integrating uncertainty estimation into their predictive capabilities. In this talk, we explore recent discoveries about the properties of the BNN hidden units' distributions, how they relate to and differ from Gaussian processes, and acknowledge the existence of ongoing debates and controversies.





# Session Info



S25

October 10th, 18:00 - 19:00 UTC

## Florence Nightingale Day

Florence Nightingale was a pioneer in data visualization and the founder of modern nursing. She used data in a novel and effective way to provide better care for wounded soldiers in the Crimean War and for public health improvements more broadly. Her pioneering work included the creation of the pie chart, which is universally used in data visualization to this day. To honor Nightingale's legacy, the Florence Nightingale Day (FN Day) was launched in 2018 to engage students, promote future career opportunities in statistics and data science, and celebrate the contributions of women to these fields. Our vision is to inspire a diverse group of young people to become future leaders in data-related disciplines. Pre-college students (ages 13 and above) from around the world are encouraged to attend this one-day free event. Components of the day include trivia games, panels of professional and student speakers, hands-on activities, and networking. In this session, our panelists will discuss their experiences hosting their FN Day in the United States and Canada. They will also share information on how to host your own FN Day.

**ORGANIZER:** Shili Lin, The Ohio State University

**CHAIR:** Shili Lin, The Ohio State University

**SPONSOR:** FN Day, CWS





# Speaker Bios

S25



**DR. DAVID KLINE**

Wake Forest University School of Medicine

<https://sites.google.com/view/dkline>

I am an Assistant Professor in the Department of Biostatistics and Data Science in the Division of Public Health Sciences at Wake Forest University School of Medicine. I am secondary faculty in the Department of Epidemiology and Prevention and Affiliate Faculty in the Department of Statistical Sciences. Previously, I was an Assistant Professor in the Department of Biomedical Informatics and a member of the Center for Biostatistics at The Ohio State University. I earned my PhD in Biostatistics from The Ohio State University in 2015. I joined the faculty at Wake Forest University School of Medicine in 2021.

Public health surveillance involves the analysis and interpretation of health-related data essential to planning, implementation and evaluation of public health policy and practice. My research is focused on developing biostatistical methodology to overcome challenges in public health surveillance and address key problems in population health and epidemiology. Specifically, I work on developing multivariate Bayesian hierarchical models for spatio-temporal disease mapping, leveraging multiple sources of data to address complex social and epidemiological problems, like the opioid epidemic. I am committed to collaborating with subject area experts so that we can leverage our collective expertise to best address challenging scientific questions of interest.



**DR. JESSICA KOHLSCHMIDT**

The Ohio State University

<https://fisher.osu.edu/people/kohlschmidt.1>

Dr. Kohlschmidt is a Senior Lecturer in the Fisher College of Business at The Ohio State University. She spent twelve years doing leukemia research prior to going back to teaching. She has always had a passion for teaching and enjoys being in the classroom. She loves to volunteer and has been involved with the Caucus for Women in Statistics and Data Science (CWS) and the American Statistical Association. One of the initiatives that drew her to CWS was sharing with young people all the things they could do with statistics to recruit them into the field at a young age. The 2018 CWS President Shili Lin and another lady presented the idea of Florence Nightingale Day. As Executive Director of CWS, Dr. Kohlschmidt worked closely with Dr. Lin to launch the first Florence Nightingale Day. This year is our 6th annual event at OSU and we have been recruiting other sites to host the event as well.



**PROF. SWATI BISWAS**

University of Texas at Dallas

<https://personal.utdallas.edu/~sxb125731/>

Dr. Swati Biswas is a Professor of Statistics and Associate Head of the department of Mathematical Sciences at the University of Texas at Dallas. She obtained her Ph.D. degree from the Ohio State University in 2003 and completed her post doctoral training from the MD Anderson Cancer Center. Her research interests include statistical genetics, genetic epidemiology, cancer genetics, and risk prediction models. She has graduated 8 doctoral students (as advisor or co-advisor) and is currently supervising two more doctoral students - most of whom are women. In addition to the Florence Nightingale Day, she participates actively in other outreach programs, e.g., she was a Co-PI of an NSF grant on increasing participation of underrepresented groups in doctoral programs in Mathematical Sciences.



**ROHAN ALEXANDER**

University of Toronto

<https://rohanalexander.com>

Rohan Alexander is an assistant professor at the University of Toronto, jointly appointed in the Faculty of Information and the Department of Statistical Sciences. He is also the assistant director of CANSSI Ontario, a senior fellow at Massey College, a faculty affiliate at the Schwartz Reisman Institute for Technology and Society, and a co-lead of the DSI Thematic Program in Reproducibility. His book, *Telling Stories With Data*, argues that a trustworthiness revolution is needed in data science, and he proposes a view of what it could look like. His research investigates how we can develop workflows that improve the trustworthiness of data science. He is particularly interested in the role of testing in data science.



**DR. DON ESTEP**

Canadian Statistical Sciences Institute

<https://canssi.ca/don-estep/>

Donald Estep is the Director of the Canadian Statistical Sciences Institute, Canada Research Chair in Computational Probability and Uncertainty Quantification (Tier 1) in the Department of Statistics and Actuarial Science, and Associate Dean of Research for the Faculty of Sciences at Simon Fraser University. Previously, he was a faculty member in the Department of Statistics at Colorado State University, where he was a University Distinguished Professor and University Interdisciplinary Research Scholar. His research interests include uncertainty quantification for complex physics models, stochastic inverse problems, adaptive computation, and modeling of multiscale systems. His application interests include ecology, materials science, detection of black holes, modeling of fusion reaction, analysis of nuclear fuels, hurricane wave forecasting, flow in porous media, and electromagnetic scattering. His research has been supported by multiple government agencies, national laboratories and industry.



# Session Info



S26

October 10th, 18:00 - 18:30 UTC

## Recent Developments in Multivariate Regression

As a prominent dimension reduction method for multivariate linear regression, the envelope model has received increased attention over the past decade due to its modeling flexibility and success in enhancing estimation and prediction efficiencies. Several enveloping approaches have been proposed in the literature, among these, the partial response envelope model that focuses on only enveloping the coefficients for predictors of interest, and the simultaneous envelope model that combines the predictor and the response envelope models within a unified modeling framework, are noteworthy. In this talk, we incorporate these two approaches within a Bayesian framework and propose a novel Bayesian simultaneous partial envelope model that generalizes and addresses some limitations of the two approaches. Our method offers the flexibility of incorporating prior information if available, and aids coherent quantification of all modeling uncertainty through the posterior distribution of model parameters. A block Metropolis-within-Gibbs algorithm for Markov Chain Monte Carlo sampling from the posterior is developed. The utility of our model is corroborated by theoretical results, comprehensive simulations, and a real imaging genetics data application for the Alzheimer's Disease Neuroimaging Initiative study.

**ORGANIZER:** Yeonhee Park, University of Wisconsin-Madison

**CHAIR:** Jessica Kohlschmidt, The Ohio State University

**SPONSOR:** The Korean International Statistical Society



# Speaker Bios

S26

**DR. YEONHEE PARK**

University of Wisconsin-Madison

Dr. Park obtained her Ph.D. in Statistics from the University of Florida in 2015, and subsequently, she underwent postdoctoral training in Biostatistics at MD Anderson Cancer Center. After completing her postdoctoral training, she joined the Department of Public Health Sciences at the Medical University of South Carolina (MUSC) as an assistant professor in 2018. Currently, she serves as an assistant professor in the Department of Biostatistics and Medical Informatics at the University of Wisconsin-Madison.



# Session Info



S27

*October 10th, 18:30 - 20:00 UTC*

## FENStatS Women in Action

In this session, three European researchers representing different European Statistical Societies based in Norway, Poland, and Spain will present some of their ongoing research in statistical modeling within the Academia. These researchers are at different stages in their careers.

**ORGANIZER:** Lola Ugarte, Universidad Pública de Navarra, Spain

**CHAIR:** Lola Ugarte, Universidad Pública de Navarra, Spain

**SPONSOR:** FENStatS



# Speaker Bios

S27



**DR. SARA MARTINO**

Norwegian University of Science and Technology

<https://www.ntnu.no/ansatte/sara.martino>

Dr. Sara Martino is an Associate Professor in Statistics at the Norwegian University of Science and Technology in Trondheim. Her research focuses on the development of statistical methods and computational tools for geospatial data with particular focus on ecological and environmental applications.



**DOROTA MLYNARCZYK**

Universitat Autònoma de Barcelona

Dorota is a dedicated Ph.D. student currently pursuing her doctoral studies at Universitat Autònoma de Barcelona. She holds a degree in Applied Mathematics from Jagiellonian University in Poland, enriched by international experiences, including research stays in Italy, Spain, England, and the United States. She has a profound interest in Bayesian statistics and her doctoral research is focused on developing mathematical models for estimating radiation doses in emergency situations. Beyond her academic pursuits, Dorota is an avid traveler and cycling enthusiast.



**DR. JAIONE ETXEBERRIA**

Public University of Navarra, Spain

<https://www.unavarra.es/pdi/?uid=7857&dato=descripcion&languageId=1>

Dr. Jaione Etxeberria holds a degree in Mathematics from the University of the Basque Country (2006) and earned her Ph.D. from the Public University of Navarre in 2012 (with an outstanding doctoral award), specializing in Statistics. Currently, she serves as an Associate Professor in the Department of Statistics, Computer Science, and Mathematics at the Public University of Navarre. Her research is focused on disease mapping, where she has developed various spatial and spatio-temporal methods with applications in epidemiology. Dr. Etxeberria has made significant contributions to her field, as evidenced by her publications in high-impact journals indexed in the JCR. She has also played an active role in several projects supported by public funding calls.



### Combining data from different sources: a story of two dolphin species in the Mediterranean

*Sara Martino, Norwegian University of Science and Technology*

Spatial distribution of wild species can be inferred from different data sources that span from well-designed study to more opportunistic sightings. Integration of such data sources is both a resource and a challenge. We propose a new protocol for presence-only data fusion, where information sources include social media platforms, with the aim to investigate several possible solutions to reduce uncertainty in the modeling outputs. As a case study, we use spatial data on two dolphin species with different ecological characteristics and distribution, collected in the central Mediterranean through traditional research campaigns and derived from a careful selection of social media images and videos. The statistical model is based on thinned Spatial Log-Gaussian Cox processes. Our findings allow for a sound understanding of the species distribution in the study area, confirming the proposed approach's appropriateness. Besides, fast inference and the straightforward implementation in the R software, make the proposed approach widely functional and easy to apply on different species and ecological contexts.

### Statistical insights into biodosimetry: analyzing absorbed dose in radiation emergencies

*Dorota Mlynarczyk, Universitat Autònoma de Barcelona*

Biological dosimetry utilizes statistical techniques to estimate radiation doses absorbed by individuals following accidental or therapeutic radiation exposure. An essential biological measure is the frequency of various biomarkers in blood cells, reflecting radiation-induced cellular damage. Therefore, a necessary component of biodosimetry is the fitting of a mathematical model describing biomarker levels for different radiation doses and the complexity of the entire process arises from biomarker-specific characteristics. For example, certain biomarkers are more affected by the time that has passed after radiation exposure, requiring an understanding of how dose and time interact. On the other hand, some biomarkers remain steady over time, although their levels increase as a person ages. Biological dosimetry, by intertwining biological insights with statistical methodologies, emerges as an indispensable tool for delivering accurate radiation dose assessments and is an integral part of effective emergency response.

### Revealing spatio-temporal patterns of rare cancers using multivariate Bayesian models with adaptable shared interactions

*Jaione Etxeberria, Department of Statistics, Computer Science and Mathematics, Public University of Navarra, Spain*

In this talk, we present a novel multivariate spatio-temporal model that introduces the concept of flexible shared interactions. Our model is specifically developed to a comprehensive joint analysis of both incidence and mortality of rare cancers. When health outcomes present low rates, models including sharing interactions can profoundly improve the accuracy of rate estimates. Our model is designed using two well-established frameworks: the shared component models, formulated for scenarios where the relationships between health outcomes are known a priori, such as cancer incidence and mortality, and the well-known spatio-temporal interactions initially proposed by Knorr-Held. By combining these robust concepts, our model gains the advantage of assessing in more detail the existing knowledge between health outcomes, while simultaneously introducing explainable spatio-temporal interactions to capture the dynamics at play and yielding more precise rate estimates. These models were fitted using integrated nested Laplace approximations in R-INLA. However, as these new models are not directly available in INLA, we have developed our own implementation using the rgeneric model. Using these proposals, we conducted an in-depth investigation into the spatio-temporal patterns of leukemia and pancreatic rates in males across 142 small areas in Great Britain from 2002 to 2019. Our model selection process demonstrates that these new models outperform conventional spatio-temporal shared component models in performance and accuracy.





# Session Info

S28

October 10th, 19:00 - 20:00 UTC

## Empowering Women's Position in Scientific Research and Statistical Organizations for a Better World: Focusing on Selected European Countries

The three talks included in the Invited Session elaborate on (1) women statisticians' role and position in a national official statistics agency, in national statistical society, the NGOs, and in the academic sphere, using a Hungarian example; (2) women statisticians' position and inclusion in contemporary society, based on the comparison of involvement in research for European developing and developed countries; and (3) the position of women in Serbia's scientific research community, emphasizing trends and insights. Talk presentations are based on secondary data, mostly official statistics data, from either national statistical agencies, or international organizations such as Eurostat, UNESCO, and/ or OECD, respectively, are used.

According to the first talk, as we meet women statisticians in all areas of the activities important in our lives, including the most diverse sciences as well, it is noticed that although the statistical definitions, principles, and methodologies are the same wherever they are applied, quite different operating rules apply to statistical institutions, national statistical society, central national bureau of official statistics, academia, and diverse NGO's. Examples of the organizations in Hungary will be given. An issue of women statisticians' position in leadership is stressed.

The second talk starts with the insight that women's participation in research increased substantially in the past few decades. However, a large statistical data gap remains. Further increase in the involvement of women in scientific research is crucial both for the development of the research and for the empowerment of women by increasing their role in society. There is no straightforward correlation between a country's wealth and its success in achieving gender parity. Therefore, the origins of the differences are more complex than is usually expected, which requires a more attentive study of the issue. The origins of the observed trends will be discussed, and possible ways of improvement of women's participation in research proposed.

The third talk highlights that gender equality in representation in the research community is an issue and question which has been attracting significant attention from various stakeholders. Many nations are striving to improve the level of women's representation in all aspects of society, the science research community being one of them. This talk aims to closely observe the scientific research community of Serbia in the period 2019 to 2021. The trend in women's representation in the scientific field and by position held is explored. After conducting the statistical analysis, the literature review will be conducted to detect which policies imposed led to the obtained results.

**ORGANIZER:** Ksenija Dumičić, University of Zagreb  
Faculty of Economics & Business

**CHAIR:** Milica Maričić, University of Belgrade, Faculty  
of Organizational Sciences, Serbia

**SPONSOR:** ISI Committee on Women in Statistics



# Speaker Bios



**DR. EVA LACZKA**

Hungarian Statistical Association

I graduated at the Department for Geography and History of University of Debrecen, in the same year I joined the Hungarian Central Statistical Office (HCSO). In 1983 I took a diploma in Statistics at university level. Between 1996-97 I was head of Human Resource Department, between 1997-99 head of Department for National Accounts, between 1999 and 2010 head of Agriculture and Environmental Statistics of the HCSO. Between 2010 and 2016 I worked for the HCSO as Deputy President in charge of Business Statistics. In 2004 I took a Ph.D. at the University of Gödöllő, the topic of my study was interpretation of farm concept in statistical and economic terms. Between 1 January 2011 and 30 June 2011 - during the Hungarian Presidency of the EU - I chaired the Council Working Party on Statistics in Brussels. I was Secretary General (1998-2015), president (2016-2020) of the Hungarian Statistical Association, deputy president (2015-2018) of the Committee on Statistics, Hungarian Academy. I am member of the ISI, FENStatS, IFCS and Royal Statistical Society and h. Professor of the University of Gödöllő and the College of Gyöngyös. The number of my publications and entries exceeds 120 in the Hungarian Academic Database.

<https://utms.edu.mk/en/>



**PROF. BLAGICA NOVKOVSKA**

University of Skopje

Prof. Blagica Novkova obtained her Doctoral degree in Economic Sciences and Master's Degree in Social Sciences. She offers more than 28 years of experience as a statistician working with official statistics, from which over 10 years as General Director of the National Statistical Office. She has attained numerous significant achievements during her work in the national statistical system (NSS), as a statistics expert, general manager of the NSO, coordinator of the NSS, projects manager as well as an international expert in statistics and research. She has proven experience in the capacity building of statistical institutions and in the development of official statistics in accordance with international standards and recommendations. Part of her expertise is quality management frameworks (ISO, TQM, EFQM, CoP), metadata management, generic statistical business process model (GSBPM), harmonization of metadata and quality, economic and social statistics methodology development, human resources management policy, development of gender statistics and gender analysis, etc. She has performed several activities supported by IMF, World Bank, ILO, UNECE, EUROSTAT in different countries. She is very active in improving of women's status in statistics and data science.

Membership in professional bodies:  
ISI (elected member, since 2011).  
Member of the CW-ISI and CWS.

<https://www.linkedin.com/in/milicamaric/>



**DR. MILICA MARIČIĆ**

University of Belgrade, Faculty of Organisational Sciences

Milica Maričić graduated from the University of Belgrade and pursued a PhD in the field of Computational Statistics at the same University. Since 2015, she is employed at the Department of Operations Research and Statistics, Faculty of Organizational Sciences, University of Belgrade. She currently works as an Assistant Professor. Her fields of research are composite indicators, rankings, structural modelling, and applied statistics, especially in the sphere of sports and marketing. She published more than 15 Web of Science indexed papers and is cited more than 350 times in Google Scholar database. She is a member of the ISI, ISI Committee on Women in Statistics and Caucus for Women in Statistics.

<http://people.dmi.uns.ac.rs/~zlc/>



**PROF. ZAGORKA LOZANOV CRVENKOVIC**

University of Novi Sad Faculty of Science

Zagorka Lozanov Crvenković has BSc, MSc, and PhD in Mathematics. She is full professor at University of Novi Sad Faculty of Sciences in the field of Probability and Statistics. She teaches Statistics to the student of Mathematics at the Department of Mathematics and Informatics, Faculty of Science and Mathematics, Novi Sad, Serbia. Also, she teaches Probability and Statistics for the student of Mathematics, Faculty of Science and Mathematics, Banja Luka, BIH, and Statistics, to the students of Pharmacy at the faculty of Medicine, Novi Sad, Serbia. Her research interests are Probability and Applied statistics. She is the author of a monograph in English, and 52 peer reviewed scientific papers. She was the supervisor of more than 100 diplomas and master theses. She is the president of Statistical Society of Vojvodina, member of Mathematical Society of Serbia, Elected member of ISI, Country Representative at ISI Committee on Women in Statistics, Country coordinator of ISLP. She is also member of the Council for Statistics of Republic of Serbia.

### **Women in Statistics in Official Statistics, in the NGOs and in the Academic Sphere (Hungarian example)**

*Eva Laczka, Hungarian Statistical Association*

Statistics is a practical activity and science aimed at observing, summarizing, analyzing and modeling the numerical information of reality. Nowadays, there are many women working in almost all statistical institutions; in Hungary their proportion is between 70 and 80 percent. Although the definitions, principles, methodologies and missions are the same wherever they are applied, quite different operating rules apply to statistical institutions. The basic principles and operation of Official Statistics are regulated by strict international and national laws, regulations (in our case EU and national rules and regulations), the heads of the institutions are appointed or dismissed by strict rules. The mission of NGOs (national statistical societies) is regulated by the founding legislation as well as Code of Ethics, the heads of the societies are elected by the members of the society, but the formulation of professional statements can be more colorful and freer. In Hungary there is also a third formation; it is the Committee on Statistics of the Hungarian Academy of Sciences. The members of the Committee on Statistics have academic degrees, the members of the Committee vote on the membership of candidate. Among others the mission of the Committee on Statistics is to support and assist the researchers, including the involvement of young researchers too. I would say that, starting from Official Statistics to the Committee on Statistics, the focus shifts more and more towards the professionalism of Statistics. The question is whether or not the different working environment caused different operation.

### **Women's Position in Contemporary Society: Comparison of Involvement in Research for Developing and Developed Countries**

*Blagica Novkovska, University of Skopje*

Women participation in research increased substantially in the past few decades. However, a large data gap remains. Further increase in the involvement of women in research is crucial both for the development of the research and for the empowerment of women by increasing their role in society. This recantation is devoted to the comparison of involvement in research between European developed and developing countries in recent years. Examples from larger context will also be provided. There is no straightforward correlation between a country's wealth and its success in achieving gender parity. Therefore, the origins of the differences are more complex as is usually expected, which requires

more attentive study of the issue. Based on the analysis of observed trends along with the up to date published relevant research from the literature, origins of the observed trends will be discussed and possible ways of improvement of the women participation in research proposed. Official available relevant reliable data provided by EUROSTAT, UNESCO and OECD on the topic will be used in the analysis.

### **The position of women in Serbia's scientific research community: Trends and insights**

*Milica Maričić, University of Belgrade, Faculty of Organisational Sciences*

The issue of gender equality in representation in research community is an issue and question which has been attracting significant attention from various stakeholders. Many nations are striving to improve the level of women's representation in all aspects of the society, science research community being one of them. This talk aims at closely observing the scientific research community of Serbia in the period 2019 to 2021. Special aspect of the talk will be towards exploration of the trend in the women's representation by scientific field and by position held. After conducting the statistical analysis, literature review will be conducted to detect which policies imposed led to the obtained results. The data used for the analysis will be the official data available from the Statistical Office of the Republic of Serbia.



# Session Info

S29

October 10th, 20:00 - 21:00 UTC

## Research at NIH from Women Statisticians

In this session, women statisticians from National Institutes of Health will present how statistics could be utilized to advance NIH's mission of enhancing health, extending life, and reducing illness and disability. The topics covered include: 1) investigating trend data over time with hidden Markov model (Dr. Choo-Wosoba), 2) Exploring the interrelationships of stress, alcohol use disorder and premature aging (Dr. Jung), 3) Examining associations between accelerometry-derived sleep, physical activity and circadian rhythms domains and major depression (Dr. Kang) and 4) identifying the whole exome sequence variants contributing to familial bipolar disorder and related conditions in Anabaptist founder populations (Dr. Sung). This session is sponsored by Korean International Statistical Society (KISS).

**ORGANIZER:** Heejong Sung, NIMH

**CHAIR:** Heejong Sung, NIMH

**SPONSOR:** KISS



# Speaker Bios

S29



**DR. HEEJONG SUNG**

National Institute of Mental Health, National Institutes of Health

Dr. Heejong Sung earned her Ph.D. in Applied Mathematics and Statistics from Stony Brook University, and worked as a post-doctoral fellow and a staff scientist at the Computational and Statistical Genomics Branch at NHGRI/NIH. Dr. Sung is currently a staff scientist in the Human Genetics Branch at NIMH/NIH, where she concentrates on identifying whole exome sequencing variants that contribute to familial bipolar disorder and related conditions in isolated founder population. Dr. Sung is also interested in developing statistical methods for tests of association between genomic data and both unrelated and related samples.



**DR. JEESUN JUNG**

National Institute on Alcohol Abuse and Alcoholism

Dr. Jung earned her Ph.D. in statistics at Texas A&M University and worked as a postdoctoral research fellow in the Division of Statistical Genetics at the Department of Human Genetics in the University of Pittsburgh. Before she joined the National Institute on Alcohol Abuse and Alcoholism, she worked at the Department of Medical and Molecular Genetics at Indiana University School of Medicine as a tenure track assistant professor. Dr. Jung joined Section on Clinical Genomics and Experimental Therapeutics (CGET) at 2018. Her research focuses on translational genomic and epigenomic approaches to identify novel biological mechanisms involved in alcohol use disorder and its associated endophenotypes. Dr. Jung is also interested in developing statistical methods to deal with massive and complex genetic and epigenetic data.



**DR. SUN KANG**

National Institute of Mental Health

Sun Jung Kang, PhD, is a Staff Scientist in Genetic Epidemiology Research Branch, Section on Developmental Genetic Epidemiology at National Institute of Mental Health (NIMH). Her research focuses on the development of translational studies to identify the regulatory systems underlying motor activity and sleep across species by joint analysis of multiple domains. She worked at Albany Stratton VA Medical Center and SUNY Downstate Medical Center before she joined NIMH in 2016. She received her BA in Mathematics from the University of Virginia, an MS in Applied Mathematics from New York University, a PhD in Applied Mathematics and Statistics from State University of New York Stony Brook, and post-doctoral training from Duke University and Case Western Reserve University.



**DR. HYOYOUNG CHOO-WOSOBA**

National Cancer Institute

Hyoyoung Choo-Wosoba, Ph.D., has joined the Biostatistics and Data Management Section, Center for Cancer Research in National Cancer Institute (NCI) as a staff scientist in September 2021, to provide statistical information in NCI clinical trials with her supervisor, Seth Steinberg, PhD. She earned her Ph.D. from the department of Bioinformatics and Biostatistics at the University of Louisville under the supervision of Somnath Datta, PhD. Her doctoral research focused on developing statistical methodology to analyze zero-inflated clustered count data. After graduation, she had worked as a post-doctoral fellow under the mentorship of Paul Albert, PhD, a senior investigator and chief of Biostatistics Branch in Division of Cancer Epidemiology and Genetics, NCI concerning statistical approaches for copy number variation (CNV) detection using next generation sequencing data.





### Whole exome sequencing association study of familial Bipolar Disorder and related conditions in Anabaptist founder populations

*Heejong Sung, National Institute of Mental Health, National Institutes of Health*

The Amish Mennonite Bipolar Genetics (AMBiGen) study seeks genetic variants that substantially increase the risk for bipolar disorder (BD) and related conditions in founder populations. In this study, the affected participants had diagnoses of BD, schizophrenia, schizoaffective disorder or recurrent major depressive disorder. Whole exome sequencing (WES) was performed at Regeneron Genetics Center. 533,144 variants with a read depth >30x, calling rate >95% in 820 samples with genotyping rate >95% and no Mendelian errors were retained for analysis of 431 cases and 389 controls. Heterozygous variants, with Anabaptist Variant Server (AVS) minor allele frequency (MAF) <0.01, shared by >5 affected individuals in their first-degree relatives, and belonging to genes with pLI >0.99, were grouped by Variant Effect Predictor (VEP) impact level (High, Moderate, Low, Modifier). The AVS is a database that provides variant annotation information for over 10,000 Amish and Mennonite individuals. Association tests were run in SAIGE-Gene, adjusting for relatedness, sex and population principal components. Modifier variants were significantly associated with the affection status although other impact level variants were not. Half of the considered modifier variants have an AMBiGen MAF greater than the MAF in AVS or non-Finnish Europeans in gnomAD. The gene list includes some known psychiatric risk genes. The AMBiGen represents the largest WES study of BD in founder populations. The results of AMBiGen WES study suggest increased burdens of rare, modifier variants shared among affected first-degree relatives in genes with a high intolerance to loss-of-function mutations.

### A novel methylation-based stress score and epigenetic age acceleration in Alcohol Use Disorder

*Jeesun Jung, National Institute on Alcohol Abuse and Alcoholism*

Stress contributes to premature aging and susceptibility to alcohol use disorder (AUD) and AUD itself is a factor in premature aging; however, the interrelationships of stress, AUD and premature aging are poorly understood. We constructed a composite score of stress (CSS) from thirteen stress-related outcomes in a discovery cohort of 317 individuals with AUD and controls using Factor Analysis. We then developed a novel methylation score of stress (MS Stress) as a proxy of CSS comprising 211 CpGs selected by a penalized regression model based on Elastic net regression in combination of bootstrapping approach. The effects of MS Stress on health outcomes and epigenetic aging were assessed in a sample of 615 AUD patients and controls using epigenetic clocks and DNAm telomere length (DNAmTL). Statistical analysis with an additive model using MS Stress and a methylation score for alcohol consumption (MS alcohol) were conducted. Results were replicated in two independent cohorts (Generation Scotland GS n=7028 and the Grady Trauma Project GTP n=795). CS and MS Stress were strongly

associated with heavy alcohol consumption, trauma experience, epigenetic age acceleration (EAA) and shortened DNAmTL in AUD. Together, MS Stress and MS alcohol additively showed strong stepwise increases in EAA. Our newly developed methylation-derived score tracking stress exposure showed stress seems to affect methylation patterns of cell-cycle sensitive genes and provide better understanding of the pathophysiology of premature aging in AUD.

### Integrative Modeling of Associations between Accelerometry-Derived Sleep, Physical Activity and Circadian Rhythms Domains and Current or Remitted Major Depression in a Community Sample

*Sun Kang, National Institute of Mental Health*

Questions: What is the overlap between objectively assessed sleep, physical activity and circadian rhythms by accelerometry and are there distinct profiles of state and trait in major depressive disorder. Findings: Application of a novel data reduction technique showed that the joint variation outweighed individual variation in each of the three domains. Two joint factors distinguished by either physical activity or sleep and their timing characterized major depressive disorder trait, whereas a third joint factor that loaded on all three domains indexed major depressive disorder state. Meaning: Findings suggest that accelerometry may be a promising biomarker to distinguish trait and state in major depressive disorder.

### A hidden Markov model approach for a joinpoint trend analysis

*Hyoyoung Choo-Wosoba, National Cancer Institute*

Joinpoint analyses has been widely used for the analysis of cancer incidence data to describe changes in patterns of disease incidence over time. The joinpoint model assumes piece-wise linear curves joined at multiple unknown joinpoints where the slope changes. However, this approach becomes computationally infeasible when the number of potential joinpoints and time points are large (e.g., joinpoints >4, time points >50), since the estimation procedure involves enumerating all the possible joinpoints. We propose a hidden Markov model (HMM) that provides a computationally feasible approach for handling larger numbers of joinpoints/time points than is feasible with a standard approach. We show that it is natural to formulate the joinpoint model by modeling successive differences in observations as a HMM with the Markov chain being specified as a birth-process where each state change reflects the occurrence of a subsequent joinpoint. The standard Baum-Welch algorithm can be used for obtaining maximum-likelihood estimates as long as we assume that the estimated incidence is approximately normal with a constraint variance. In many realistic settings the variance in the estimated incidence increases with the mean. In this case, we develop a two-step algorithm for obtaining approximate maximum-likelihood estimators that updates the variances in the emissions distribution with successive applications of the Baum-Welch algorithm. We show the performance of the various estimation approaches with simulations and an example.



# Session Info



S30

*October 10th, 20:30 - 21:00 UTC*

## Bilinear Regression Models Useful in the Analysis of Longitudinal and Clustered Longitudinal Data

Multivariate growth curve models (GCMs) are bilinear models useful in the analysis of growth curves, dose-response curves as well as other curves associated with continuous variables – hence play important roles in the analysis of longitudinal data, especially in scenarios where sample size is limited. The model is a natural extension of the classical multivariate analysis of variance (MANOVA) model and arises when linear restrictions on the MANOVA model are imposed, as such referred to as the generalized multivariate analysis of variance (GMANOVA) model. In this presentation, I will first provide a brief overview on the GCMs models and their extensions, highlight the bilinear nature of the models and discuss how the vector operator plays important roles in our understanding of the models and the bilinear projections with respect to within and between individual design matrices. I will then present our contributions to estimation, hypothesis testing, residual analysis, and model diagnostics. I will also illustrate applications in the analysis of longitudinal data including clustered longitudinal data.

**ORGANIZER:** Wendy Lou, University of Toronto

**CHAIR:** Wendy Lou, University of Toronto

**SPONSOR:** SSC





# Speaker Bios

S30

**JEMILA HAMID**

University of Ottawa

Professor Jemila Hamid completed her undergraduate studies (double major in statistics and computer science) at Addis Ababa University, Ethiopia. She then traveled to Uppsala, Sweden, to pursue her graduate studies, where she received her licentiate (MPhil) and PhD degrees in mathematical statistics, with specialization in multivariate methods. She moved to Canada in 2006, did her post-doctoral training at the University of Toronto, then another post-doc at the Hospital for Sick-Children. After completion of her post doctoral training, she has held positions at public health agencies as well as major research and academic institutes across Canada. Dr.

Hamid joined the University of Ottawa in July of 2020, where she is currently a full professor at the department of mathematics and statistics. She continues to collaborate with clinicians and health researchers in many interdisciplinary projects, often as a lead biostatistician. Dr. Hamid's research interests and activities lie in biostatistics with a focus on multivariate methods, analysis of correlated outcomes and evidence synthesis methods. Her research involves methods development and applications, and has published extensively in both statistics and biomedical journals.



# Session Info



S31

*October 10th, 21:00 - 21:30 UTC*

## 10 Simple Rules for Teaching Data Science

This talk will present 10 simple rules I follow when teaching data science. These rules have been largely learned from others in the data science and computational education community. I have trialed and tested them in my teaching of data science throughout the past 6 years in both undergraduate and graduate data science courses at the University of British Columbia.

**ORGANIZER:** Wendy Lou, Univeristy of Toronto

**CHAIR:** Wendy Lou, Univeristy of Toronto

**SPONSOR:** SSC



# Speaker Bios

S31



DR. TIFFANY TIMBERS

University of British Columbia

<https://www.tiffanytimbers.com/>

Tiffany Timbers is an associate professor of teaching in the Department of Statistics at the University of British Columbia (UBC). After completing her PhD in neuroscience at UBC, she held a Banting post-doctoral fellowship at Simon Fraser before joining the UBC in 2016 as a teaching and learning fellow, and then a professor of teaching tenure-track role in 2018. She is also co-director of the Master of Data Science (MDS) program at UBC. Tiffany teaches courses under the data Science umbrella at UBC, including DSCI 100, an introductory data science course for undergraduates and DSCI 310, a course on reproducible and trustworthy for data science. Primarily, though, her duties are to the MDS program, teaching courses in programming, collaborative software development, data science workflows, statistical inference and the capstone project. Many of these courses have been either developed by, or dramatically adapted and improved by, Tiffany's advocacy and effort. She is an internationally recognized leader in teaching data science and was recently awarded the SSC's Early Career Educator award. Tiffany is also a coauthor of two textbooks (Data Science: A First Introduction and Python Packages), both open educational resources, and also available as published texts through CRC Press.



# Session Info

S32

October 10th, 21:00 - 21:30 UTC

## A Historical Perspective on the Role of Women in Statistics

Prior to the twentieth century there have been few women statisticians or mathematicians whose work has been recorded. This may be due to social barriers and culturally imposed restrictions, such as negative attitudes about their scientific talent and the usefulness of mathematics for them, difficulties in obtaining a mathematical education and lack of support and understanding to relieve women of domestic tasks. However we can highlight the achievements of Aglaonice, Hypatia, Chatelet, Germain, Lovelace, and Nightingale, among others. Although men still dominate in careers in statistics, there are some current high achieving female statisticians, who serve as good role models. Then I will do a review of women who have been most prominent since the beginning of the Statistics. I hope that this paper will serve as an inspiration to current women statisticians to enlarge the role of Statistician women in the world.

**ORGANIZER:** Teresita Terán, Universidad Nacional de Rosario

**CHAIR:** Nairanjana (Jan) Dasgupta, Washington State University

**SPONSOR:** CWS



# Speaker Bios

S32



DRA. TERESITA E. TERÁN

Universidad Nacional de Rosario

Dr. Terán is currently a Professor of Statistics in the Faculty of Economics and Statistics at National University of Rosario, Argentina.

She also holds the position of Professor Biostatistics within the Faculty of Veterinary Science. She has been an appointed Member of the Academic Committee of the Master of Food Safety Center for Interdisciplinary Studies at National University of Rosario.

Other notable positions held by her are: Fulbright Scholar, President of the ICOTS International Committee 11, Vice President of IASE 2017-2020 and Coordinator of VPCT Portugal 2018.



# Session Info




S33

*October 10th, 21:30 - 22:00 UTC*

## Networking Session

Join us for a 30 minute networking session. This is for those attendees based in the United States, but all are welcome!



**ORGANIZER:** Jessica Kohlschmidt, The Ohio State University and Jan Dasgupta, Washington State University  
**CHAIR:** Jessica Kohlschmidt, The Ohio State University and Jan Dasgupta, Washington State University  
**SPONSOR:** ASA/CWS





# Session Info



S34

October 10th, 22:00 - 23:00 UTC

## Being a Woman in Brazil: Statistics on Gender and Challenges

In this section, four Brazilian women are invited to present some gender statistics in education and health that reflect the situation of women in Brazil and to discuss problems and challenges they are facing, especially in math related areas.

**ORGANIZER:** Gisela Tunes, Universidade de São Paulo

**CHAIR:** Gisela Tunes, Universidade de São Paulo

**SPONSOR:** Associação Brasileira de Estatística (ABE)



# Speaker Bios

S34

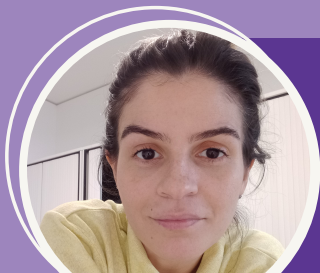


**DR. RENATA ROJAS GUERRA**

Universidade Federal de Santa Maria

Dr. Renata Rojas Guerra is an Assistant Professor in the Department of Statistics of the Federal University of Santa Maria, Brazil. From 2022 to 2023, she also collaborated as a visiting researcher at the Telecommunications and Remote Sensing Laboratory, University of Pavia, Italy. She was the Jan Tinbergen Awards: Division A of the International Statistics Institute and in the 6th Call of Serrapilheira Institute in the Mathematics field. Her research interests include data science, distribution theory, econometrics, regression analysis, dynamic models, reliability engineering, and statistical signal processing.

<https://observatorioobstetricobr.org/>



**DR. AGATHA RODRIGUES**

Federal University of Espírito Santo

Dr. Agatha Rodrigues is an assistant professor at the Federal University of Espírito Santo (UFES, Brazil) with research in Survival Analysis, Biostatistics, and Machine Learning areas. As the principal investigator of the Brazilian Obstetric Observatory (OObR, <https://observatorioobstetricobr.org/>), Dr. Rodrigues analyzes public datasets related to the pregnant and postpartum population to support public policies in Brazil. OObR was granted by the Bill & Melinda Gates Foundation in the Data Science applied to maternal health call. Additionally, Dr. Rodrigues is the coordinator of the Data Science Laboratory (DaSLab) at UFES and she is a co-founder of the Vitoria chapter of R-Ladies, a global community dedicated to promoting gender diversity in data science and R programming.



**PROF. VANESSA LEOTTI**

Federal University of Rio Grande do Sul

Graduated in Bachelor of Statistics, MsC and PhD in Epidemiology. Professor in the Department of Statistics and in the Graduate Program of Epidemiology. Teaches and researches about biostatistics. Interested in discussing impacts of capitalism and patriarchy in science.



### **Gender and race in mathematics, applied mathematics, and statistics: profile of undergraduate students in Brazil**

*Renata Rojas Guerra, Universidade Federal de Santa Maria*

In the exact sciences, there has historically been a significant disparity in the proportions of men and women, with an apparent underrepresentation of women. In this context, the Brazilian Societies of Mathematics, Computational Mathematics, and Statistics joined forces to conduct a study that maps the gender and race of Brazilian undergraduate students in mathematics, applied mathematics, and statistics. It is an exploratory analysis of data from all Brazilian public and private higher education institutions focusing on students who enrolled or graduated from undergraduate programs in these areas between 2009 and 2019.

This presentation highlights some results from this study to promote reflections on the degree of underrepresentation in the analyzed courses and its evolution over this period. The analyses encompass comparisons between different demographic and generational characteristics in the students' profiles and, in general, confirm the lower participation of women, even in more recent years. It is hoped that this exploratory study can stimulate further discussions on the topic along with forthcoming research to identify variables that could be modified to reduce gender inequality in Brazilian higher education.

### **Data-driven public policies for the pregnant and postpartum population**

*Agatha Rodrigues, Federal University of Espirito Santo*

In this talk we present data on the situation of the pregnant and postpartum population in Brazil, providing insights into race, education level, and regional aspects. Special attention will be given to the scenario faced by this population during the COVID-19 pandemic, discussing how many lives were saved due to pressure from society to prioritize the maternal population for vaccination, since this population was neglected by the Brazilian government at that time. We also present cases in which the results of data analysis from pregnant and postpartum people supported the discussion of public policies for this population.

### **Maes das Guriás: an example of the importance of forming a network to discuss gender bias in academia**

*Vanessa Leotti, Federal University of Rio Grande do Sul*

The Maes das Guriás project is a project conducted by female mathematics and statistics professors and students of several education institutions in Rio Grande do Sul, Brazil. Several lives were held to discuss topics such as implicit bias, maternity difficulties in academic careers, aesthetic pressure, between others. The discussions allowed naming the problems and identifying support networks.



# Session Info

S35

October 10th, 23:00 - 24:00 UTC

## Exploring Gender Disparities in Health, Education, and Employment in Costa Rica

This conference session encompasses four studies that shed light on critical issues related to gender disparities and their impact on health, education, and employment outcomes of Costa Rican women. The first study investigates the predictors of participation in Pap smear screening among Costa Rican women since the detection of precursor lesions through Papanicolaou (Pap) smear remains a critical tool in the context of prevention in Costa Rica. The study offers in depth characterization of women between the ages of 20 and 69 who have never had a Pap smear or have not been screened in over five years. The second study quantifies the influence of sexist ideas and stereotypes on young women's performance in standardized Math tests among high-school girls (H.S.), and university women majoring in Social Sciences and Humanities (SSH), and in Science, Technology, Engineering and Math (STEM). This study exposes several mechanisms by which ideologies and gender stereotypes affect women's Math performance. The third study aims to profile individuals who graduated between 2011 and 2013, considering both their academic and employment-related characteristics, with a focus on potential interdisciplinary combinations. The methodology of social networks or graphs was employed, encompassing 58 out of the 114 disciplines from the graduate follow-up study that exhibited combinations of diplomas. The findings provide a deeper understanding of the interconnections among areas of study and their implications on the academic and professional trajectories of graduates. Lastly, the fourth study analyzes gender-related wage differences in faculty and administrative positions at the University of Costa Rica in 2020. Using a quantile regression model to determine possible associated factors, the study detects salary inequities by gender with opposite patterns in administrative and academic sectors: while men faculties tend to show higher salaries than women faculties, the relation was inverted in the administrative staff. Collectively, these four studies contribute to a deeper understanding of the complex interplay between gender, health, education, and the labor market, paving the way for evidence-based interventions to address gender disparities and promote gender equality in various contexts. All four studies were conducted by female faculty of the School of Statistics of the University of Costa Rica.

**ORGANIZER:** Alejandra Arias-Salazar, University of Costa Rica

**CHAIR:** Alejandra Arias-Salazar, University of Costa Rica

**SPONSOR:** University of Costa Rica



# Speaker Bios

S35



HAZEL QUESADA-LEITÓN

University of Costa Rica

Bachelor of Statistics from the University of Costa Rica. Lecturer at the same university, since 2020. She has been researcher at the Health Institute Research (since 2018) and the Central American Center of Population (since 2023). She is co-author in 4 scientific publications. Her areas of work include generalized linear mixed models, survival analysis, Bayesian statistics. Her principal areas of research are related to the health field.



DR. EILIANA MONTERO-ROJAS

University of Costa Rica

Ph.D. in Educational Measurement and Evaluation from Florida State University, USA, and Bachelor of Statistics from the University of Costa Rica. Currently a retired professor from that house of studies, she was a teacher at the School of Statistics and a researcher at the Institute of Psychological Research. She has also been a professor in various postgraduate programs. The American Statistical Association (ASA) awarded her the distinction "Educational Ambassador 2010-2011". She is the author or co-author of more than 40 scientific publications. Her areas of work include mixed models (multilevel), structural equation models, program impact evaluation, and construction and validation of instruments and standardized tests with the aim of promoting educational excellence and equity.



KAREN CORRALES-BOLÍVAR

University of Costa Rica

Master in Statistics at the University of Costa Rica. She has practiced her profession in the state sector on issues related to education, employment, health, environment, and industry 4.0. Her main areas of interest are data science, employability indicators, college studies duration period analysis, employability of professional people, competencies and skills of university careers, digital gaps, all of these areas applied to connect decision makers with data.



DR. EUGENIA GALLARDO-ALLEN

Universidad de Costa Rica

She has a Ph.D. in Government and Public Policy from the University of Costa Rica, and Master's degree in Statistics from the University of Costa Rica. Currently, she teaches introductory courses at the Department of Statistics of the University of Costa Rica. In 2018, she was awarded with the Oscar Oszlak Prize by the Inter-American Network of Education in Public Administration. Her areas of interest include educational policy, data analytics, and higher education. She has scientific publications related to higher education.



### Women's Participation in Pap Smear Screening in a Developing Country: Evidence for Improving Health Systems

*Hazel Quesada-Leitón, University of Costa Rica*

**Introduction:** Every year about 83,000 women are diagnosed with cervical cancer in the Americas. Latin America and the Caribbean (LAC) has one of the highest incidence and mortality rates from cervical cancer in the world. Although incidence has decreased by half in the last 30 years, cervical cancer remains a public health concern. The detection of precursor lesions through Papanicolaou (Pap) smear remains a critical tool in the context of prevention in Costa Rica and many other LAC countries. **Objective:** To determine predictors of participation in Pap smear screening among Costa Rican women, with a special focus on women who have never had a Pap smear or have had a smear 5 or more years ago. **Methods:** The data source for this study is the Costa Rican Households National Survey conducted in 2014. This survey is representative at the national, urban/rural zone, and administrative region level. A subsample of women aged 20 to 69 years who responded to the survey's Papanicolaou Module were included in this study ( $n = 11,709$ ). Statistical analyses were conducted in R-Studio. Statistical significance level was set at 5%. Two multinomial regression models were estimated. The first model aimed to explain the five different categories of cytology use, which were defined according to the last time women had a Pap smear. The second model aimed to explain the five different categories of reasons why women had never had a Pap smear. Both models controlled for age, educational attainment, and marital status. **Results:** Young women with high educational attainment were more likely to have never had a cytology. Women with a lower educational attainment, married, or in domestic relationship and of older age had greater odds of having had a cytology 5 or more years ago. Each year increment in age was significantly associated with an increase in the odds of never having a Pap smear because of health care access issues or because of cultural reasons as compared to not having an active sexual life. **Conclusions:** Findings can inform public policy targeted to higher risk female populations where access to health services can be improved.

### Expected and unexpected effects of sexism on women's mathematics performance

*Eiliana Montero-Rojas, University of Costa Rica*

Research has shown that gender differences in Math performance are partially predicted by sociocultural aspects such as sexist ideologies and stereotypes. This study examined sexist ideologies as predictors of women's achievement in standardized Math tests, and the mediation role of Math-gender stereotypes and Math self-efficacy, while controlling for abstract reasoning, among high-school girls (H.S.), and university women majoring in Social Sciences and Humanities (SSH), and in Science, Technology, Engineering and Math (STEM). Among H.S. girls, data showed the expected indirect effect of Math gender stereotypes on Math achievement via Math self-efficacy. Among university students, model adjustment was less optimal. An unexpected positive relationship between hostile sexism and Math performance in STEM fields emerged. Our data suggest several mechanisms

by which ideologies and gender stereotypes affect women's Math performance.

### Choice of careers among graduates from Costa Rican universities (2011-2013)

*Karen Corrales-Bolívar, University of Costa Rica*

The increase in the attainment of university diplomas has sparked the interest of the Labor Market Career Observatory (OLaP, in Spanish) in investigating combinations of university studies undertaken by graduates. This study aims to profile individuals who graduated between 2011 and 2013, considering both their academic and employment-related characteristics, with a focus on potential interdisciplinary combinations. The methodology of social networks or graphs was employed, encompassing 58 out of the 114 disciplines from the graduate follow-up study that exhibited combinations of diplomas. Furthermore, an exponential random graph model was applied to analyze relationships among combinations of university careers. It was found that the combination of disciplines in Archival Science and Technology Management had the highest number of graduates in both fields. The analysis revealed the presence of nine significant variables connecting academic and employment-related aspects, suggesting that a higher level in certain variables reduces the probability of studying disciplines jointly. These findings provide a deeper understanding of the interconnections among areas of study and their implications on the academic and professional trajectories of graduates.

### Difference in the Salary Structure by Gender at the University of Costa Rica

*Eugenia Gallardo-Allen, Universidad de Costa Rica*

The present paper has the purpose of analyzing differences in salaries between men and women from academic and administrative staff of the University of Costa Rica during 2020. Several linear and quantile regression models were proposed to determine possible associated factors including employment status (tenured/non tenured), sector to which the official belongs (Administrative staff/ faculty), number of years worked, as well as an interaction between gender and sector. The dependent variable was the gross salary paid by the institution during 2 typical months (August and November 2020). Given the asymmetric distribution of salary, a quantile regression model was conducted with the purpose of verifying that if the same patterns were presented across different quantiles. The analyses detect salary inequities by gender with opposite patterns in administrative and academic sectors: while men faculties tend to show higher salaries than women faculties, the relation was inverted in the administrative staff. This results are coherent to stereotypes about the jobs men and women should assumed. In this way, some professional positions such as administrative headquarters are culturally represented as women's jobs. On the other hand, non-professional positions (for example, maintenance and security) are often associated with masculine stereotypes.





# Session Info



S36

October 10th, 24:00 - 24:30 UTC

## Closing

Join the executive director of CWS, Jessica Kohlschmidt, and the 2023 IDWSDS organizing committee as we say farewell to this year's conference.

**ORGANIZER:** Jessica Kohlschmidt, The Ohio State University

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Thank you for attending and participating in our conference this year! We value each person's contribution to make this an enjoyable day full of inspiration and encouragement. While this was only 24 hours of celebrating the accomplishments of women in statistics and data science, we hope you can take the momentum from this day and keep it going throughout the year! We hope you'll be part of our conference again next year. Save the date for next year's conference on October 8th!

