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BIOMETRIC BULLETIN

International Biometric Society Internationale Biometrische Gesellschaft Société International de Biométrie

"Biometry, the active pursuit of biological knowledge by quantitative methods." - R.A. Fisher, 1948

President's Corner

Greetings!

Well my seven-month research visit to the United Kingdom (UK) is over, and now I am sitting in the airport in Marrakech, awaiting travel first to the UK for just one day and then home to Seattle and the University of Washington. My visit to the UK enabled me to participate more easily in ***European Regional IBS Meetings***, and I very much enjoyed both the ***EMR Meeting*** in Thessaloniki in May and the ***NBBC*** in Copenhagen in June. These regional meetings show the vibrant strength of our Regions, with events directed to, and participation from, our younger members, who will provide the next generations of leadership of our Society.

However, I make no apology for focusing this ***President's Corner*** not on an IBS meeting but on the ***ISI 61st WSC*** here in Marrakech. The IBS has been much in evidence at this meeting, from the ***Opening Session*** where the inaugural ***International Prize in Statistics (IPS)*** was awarded to our Honorary Life Member David Cox to the very last award presented in the final ***Awards Ceremony*** to our two young IBS members, funded to be here under the new joint ISI/IBS program to bring members of each Society to the biennial conference of the other. Both awardees participated actively here, and showed again the strength we have in our younger members. Also here at ISI were many more senior IBS members, participating actively in both their ISI and IBS roles.

Back to the ***Opening Session*** and the award of the ***IPS*** – this was a memorable and moving occasion, at which the presidents of all the five societies supporting the ***Prize*** were present: ASA, RSS, IMS, IBS and of course the ISI itself. Although David Cox was sadly unable to be there, he gave a gracious speech of thanks by video. His very first acknowledgement was to IBS, in which he spoke of attending the ***British Region Meetings*** in the early years of our Society, when our founding President, R.A. Fisher, was also present (again a strong recognition of IBS as a Society of Regions). We were also reminded of David's strong support for Young Statisticians. Many will remember David's presence at ***IBC2014*** in Florence, where he spoke and presented awards to the winners of our ***IBS Young Statisticians Paper Competition***. A young statistician at ***NBBC*** told me that for him this was the landmark event of the conference, and one he will always remember. David will have an impact on statistics and statisticians for generations to come, and it was an honour to be a part of this ceremony. As the only woman among twelve Moroccan government ministers and five statistical society presidents, my presence on stage aroused enthusiasm from many younger Moroccan statisticians, both men and women, who would not otherwise have recognized me, or even known of IBS. Many approached me, and I am now on many Moroccan cell phones – selfies being the younger-generation form of commemorating important interactions at meetings.

ISI President Pedro Silva took advantage of the presence of the five presidents to organize two special sessions, one for ASA and RSS and the other for IMS and IBS, to present our societies to the wider ISI membership. The IBS talk was well received, and I was able to explain who we are, what we do and how we do it, as well as encouraging all to consider coming to ***IBC2018*** in Barcelona. As always I emphasized two things: the three main areas of our disciplinary diversity in Ecology, Agriculture and Human Health, and our geographic diversity as a Society of 35 Regions worldwide. The talk attracted attention, and potential IBS members from countries where we currently have few (if any) members, including Gabon, Iran, Egypt and Ethiopia, and I am very grateful to Professor Silva and ISI for the opportunity to present IBS to a broad audience.

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From the Editor

Dear Readers,

In this issue I am happy to publish an introductory paper on the ***STRengthening Analytical Thinking for Observational Studies (STRATOS)*** initiative chaired by Willi Sauerbrei (University of Freiburg, Germany). It aims to provide statistical guidance for key topics in the design and analysis of observational studies and is comprised of nine Topic Groups (TG) – for example, Missing data, Study design, Causal inference, Survival analysis and more. I was first introduced to this initiative by my supervisor, Prof. Laurence Freedman, who is Chair of the ***Measurement error TG***. Later on I heard a few talks about the initiative at several IBS conferences. In the next issues we will publish a series of short articles regarding each of the nine TGs. In each article we will give a general description of the TG, as well as aims and a few examples that illustrate good statistical practice.

In the ***Region News*** you can read about events in the bio-statistical field. I would like to congratulate the Society's new Singapore Region (SING), which has contributed news to this issue of the ***Biometric Bulletin*** for the first time. May you have lots of news items to share with the IBS community in the future.

In the Software Corner Garth Tarr (AR) and Havi Murad (EMR) will jointly write a series of articles on ***How to easily interpret interactions in various statistical models in R and SAS***. Understanding statistical interactions requires some calculations; however, recently, statistical packages have incorporated new automatic options and graphs that we would like to bring to your attention. Garth will demonstrate the R program, and I will demonstrate the SAS program, on some real data that we've chosen. The first article in this series to appear in this issue will be about ***Visualization and interpretation of interactions in binary logistic regression models.*** The example is from the Birth Weight Data from SAShelp Data Sets.

You will also find a new ***Mathematical Riddle*** on matches. Please send answers to HaviM@gertner.health.gov.il. The first five to answer correctly will be mentioned in the next issue of the ***Bulletin***. And as always, I'll appreciate if you could email me any interesting riddles you encounter to be published in a future issue.

I would like to remind you about the **IBS Journal Club**, which is a new, welcomed initiative designed by the Society's Education Committee. The purpose is to widen the scope for understanding recent papers published in IBS journals and to provide a networking opportunity for IBS members through a regular internet forum. The last Journal Club discussion was held on Thursday, 10 August 2017. It was centered around the following paper recently published in Biometrics: *Rouanet A, Joly P, Dartigues JF, Proust-Lima C, Jacqmin-Gadda H. Joint latent class model for longitudinal data and interval-censored semi-competing events: Application to dementia. Biometrics. 2016;(December):1123–35*. IBS members can register for future Journal Clubs online, free of charge. Future dates are listed on the IBS website.

Havi Murad
Twitter: @havimurad

Region Key

Regions

RArg - Argentinean Region
AR - Australasian Region
ROeS - Austro-Swiss Region
RBe - Belgian Region
GBot - Botzwanian Region
RBras - Brazilian Region
BIR - British and Irish Region
RCAC - Central American-Caribbean Region
GCl - Chilean Region
CHINA - Chinese Region
EMR - Eastern Mediterranean Region
ENAR - Eastern North American Region
ECU - Ecuadorian Region
GEth – Ethiopian Region
RF - French Region
DR - German Region
GGha - Ghanian Region
IR - Indian Region
RItl - Italian Region
JR - Japanese Region
GKe – Kenyan Region
RKo - Korean Region
GMal - Malawi Region
GNi – Nigerian Region
NR - Nordic-Baltic Region
PKSTAN – Pakistani Region
GPol – Polish Region
GRo – Romanian Region
SING – Singaporean Region
GSaf – South African Region
REsp - Spanish Region
ANed - The Netherlands Region
GUgan – Ugandan Region
WNAR - Western North American Region
GZim – Zimbabwean Region

Networks

CEN - Central European Network
CN - Channel Network
EAR – East Asian Network
SUSAN - Sub-Saharan Network

Appreciation Expressed to Members of the Representative Council!

The Society is indebted to the retiring members of the Representative Council (RC) who have given selflessly of their time and service to IBS. **Thirty-two (32)** of our long-time members completed terms of service this year; moreover, many of the retiring RC members have served as Committee Chairs, chaired the Local Organizing Committee (LOC) and International Program Committee (IPC) and participated in special task groups of the Society. Appreciation is expressed to the following outgoing members of the RC:

As of September 9, 2017

Region	Name	Country Code
Italian	Adriano DeCarli	ITA
Pakistan	Alia Sajjad	CAN
China	Andrew Xiao-Hua A. Zhou	USA
German	Annette Kopp-Schneider	GER
Eastern North American	Bradley P. Carlin	USA
Western North American	Christiana Drake	USA
Uganda	Dan K. Kajungu	UGA
Eastern Mediterranean	Ergun Karaagaoglu	TUR
Nordic	Geir Egil Eide	NOR
German	Hans-Peter Piepho	GER
French	Helene Jacqmin-Gadda	FRA
Korean	Jae Won Lee	KOR
Singapore	Jialiang Li	SGP
Spanish	Jose-Luis GonzÃ¡lez AndÃºjar	SPN
Ghana	Kaku Sagary Nokoe	GHA
Australasian	Kathy Ruggiero	NZL
Australasian	Kenneth G. Russell	AUS
Brazilian	Luzia Aparecida Trinca	BRA
Argentinean	Maria Gabriela Cendoya	ARG
the Netherlands	Marinus Eijkemans	NLD
the Netherlands	P.H.C. Eilers	NLD
Indian	Perumal Venkatesan	IND
British	Rachel McCrea	GBR

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President's Corner

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I also met with representatives from Morroco, who are in the final stages of planning to apply to form a new North African Region of the IBS, focused in Morroco but also representing members in other countries across North Africa. They have a list of twelve regular members with completed application forms, as well as a similar number of student member applications. They have draft bylaws, currently in English but pending translation into French and Arabic for their local needs, and they have met to elect the initial officers of their proposed region. In fact, I have no doubt that we will soon be welcoming this new youngest IBS Region, and I am immensely grateful to Ziad Taib, President of the Nordic-Baltic Region, for helping us to facilitate this new initiative.

Next, on to the ***IBS Invited Session***, now a regular feature of the ISI's ***WSC***. Here the three talks again represented our disciplinary diversity, with talks on monitoring species biodiversity, on new models for modeling disease progression in banana crops and on whole-genome genetic and genomic studies. Each talk addressed specific examples and issues but demonstrated the much broader impact of statisticians who collaborate deeply with scientists in the biological disciplines. I am very grateful to our three speakers for presenting what our Society has to offer in Ecology, Agriculture and Human Biology.

Last but not least, to our new ISI/IBS jointly funded program to bring younger members of each Society to the biennial conference of the other. Due to time pressure, the competition for IBS members to attend ***WSC2017*** was run on a one-off basis. Within the very short 10-day time window between announcement and deadline, it attracted over 30 applicants from 16 different countries, and we were very happy to welcome IBS award winners Fernando Aquate (Argentina) and Annette Okoth (Kenya) to ***WSC2017*** in Marrakech. Each presented at the meeting and received their awards in the final ***Awards Ceremony*** (see photo). More importantly, for the future, this program proposal was received with enthusiasm by the Executive Board. Not only does it now have permanent approved funding, but it was recommended that in the future we expand the program, to bring more young scientists to each other's conference. I am very grateful to the ISI/IBS liaisons Kaye Basford and Jane Hutton for proposing and initiating this program and look forward to meeting future competition winners in Barcelona (***IBC2018***), Kuala Lumpur (***WSC2019***), Seoul (***IBC2020***) and The Hague (***WSC2021***) – and the IBS Conference Advisory Committee is now actively discussing possible locations for ***IBC2022***.

IBS members Fernando Aquate and Annette Okoth receive their award certificates from current and former IBS Presidents Elizabeth Thompson and Kaye Basford at ISI WSC2017 in Marrakech.

Well, of course other things are happening beyond ISI. Another very important program in the non-***IBC*** year is the program under the Awards Fund Committee to fund IBS members from Developing Countries to participate in IBS Regional meetings. The program got off to a rousing start in 2015, but 2017 will show even greater and broader participation. Due to the number of applicants, we have implemented a third August 31 deadline to accommodate the late-in-year Regional Meetings such as the ***Australasian*** and ***East Asian Meetings***, and IBS Officers will recommend providing additional funding to the program, both for this year and in future budgeting. The Representative Council program to fund inter-regional and network collaborative projects, often associated with Regional IBS Meetings, has also been active.

As a Society of Regions, I consider these initiatives as among the most important things we do, although I should also mention another that is bringing IBS members of different regions together – the ***IBS Journal Club***, under the Education Committee has gotten off to a great start! A third session in August was recently held, with two more to follow in October and December. These sessions are also made available through our website, so that all IBS members can benefit, even those with time zones that may preclude participation in the live event. Please visit the newly reorganized web page of our educational materials, both audio and video. I hope you will all be pleased by the quality and quantity of the materials we now show there.

The IBS biennial cycle continues, and this is the year that about half our members of Representative Council start their four-year terms of service (1 July). I welcome new and renewing Council members who will serve from July 2017 to June 2021. I also thank continuing Council members, and a very special thank you for their service goes to those who rotated off this year. To remind you all who your representatives are, a full list of the current Council appears in this issue of the ***Bulletin***.

Finally, planning for Barcelona is now proceeding fast. The invited sessions, short courses and ***Statistics-in-Practice Session*** are now set. The organization of our slate of other special sessions is my next main task, and in fact, the presence of many more senior IBS members in Marrakech was helpful in that regard. Testing of the abstract submission and review system is in progress, and we recently announced the ***2018 Call for Contributed Papers***. ***IBC2018*** in Barcelona looks to be another great ***IBC***, but of course that depends also on each of you. **Make your plans now for July 2018 – see you in Barcelona.**

Elizabeth Thompson

Appreciation Expressed to Members of the Representative Council!

Continued from p. 4

As of September 9, 2017

Region	Name	Country Code
British	Ruth King	GBR
South Africa	Samuel Osmond Manda	ZAF
Japanese	Satoshi Hattori	JPN
Eastern North American	Scarlett L. Bellamy	USA
Argentinean	Sergio Bramardi	ARG
Eastern Mediterranean	Stergios Tzortzios	GRC
Eastern North American	Timothy D. Johnson	USA
Poland	Tomasz Burzykowski	BEL
Japanese	Yutaka Matsuyama	JPN

Our new and returning RC members are more important than ever, as they are responsible for sharing their unique perspectives on the issues that are of concern to individuals and the scientific community in all 35 IBS Regions. RC members are strongly encouraged to join us at an in-person meeting once every two years during the ***IBC*** (the next meeting will take place in Barcelona in July 2018), be willing to serve on a standing committee of the IBS and participate fully in their Region's activities/governance. Finally, RC members are also asked to share information they have learned at in-person Region and Network meetings.

We are pleased to present our RC members for 2017 through 2019 :

Welcome to Our New / Returning Representative Council Members! (2017-2019)

As of September 9, 2017

Name	Region	Term Start	Term End
Pablo Reeb	Argentinean Region	7/1/2017	6/30/2021
Andrea Lavalle	Argentinean Region	7/1/2017	6/30/2021
Ross Darnell	Australasian Region	7/1/2015	6/30/2019
Alison Kelly	Australasian Region	7/1/2017	6/30/2021
Kevin Murray	Australasian Region	7/1/2017	6/30/2021
Hans Ulrich Burger	Austro-Swiss Region	7/1/2011	6/30/2019
Martina Mittelböck	Austro-Swiss Region	7/1/2013	6/30/2021
Andrea Berghold, Chair	Austro-Swiss Region	7/1/2013	12/31/2017

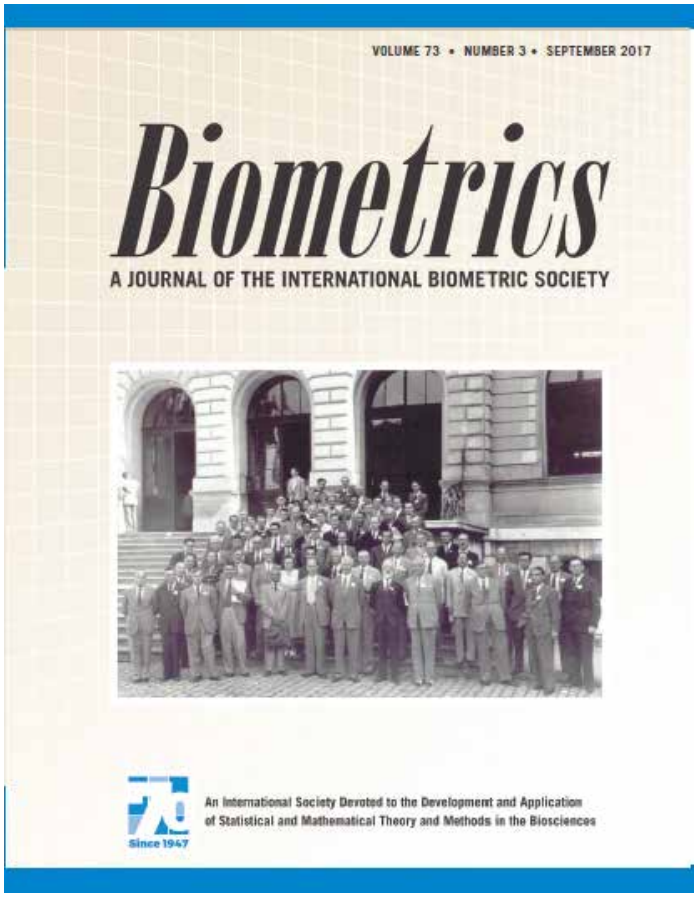
Name	Region	Term Start	Term End
Stijn Vansteelandt	Belgian Region	7/1/2011	6/30/2019
Catherine Legrand	Belgian Region	7/1/2017	6/30/2021
Njoku Ola Ama	Bostwanan Region	7/1/2011	6/30/2019
Clarice Garcia Borges Demetrio	Brazilian Region	7/1/2016	6/30/2019
Júlia Maria Pavan Soler	Brazilian Region	7/1/2013	6/30/2021
Renato Martins Assunção	Brazilian Region	7/1/2011	6/30/2021
Daniel Farewell	British and Irish Region	7/1/2015	6/30/2019

As of September 9, 2017

Name	Region	Term Start	Term End
Nicole Augustin	British and Irish Region	7/1/2017	6/30/2021
Michael Sweeting	British and Irish Region	7/1/2017	6/30/2021
Sergio Muñoz	Chilean Region	7/1/2015	6/30/2019
Xiao-Hua A. Zhou	Chinese Region	7/1/2012	6/30/2021
Pingyan Chen	Chinese Region	7/1/2012	6/30/2021
Urania Dafni	Eastern Mediterranean Region	7/1/2017	6/30/2021
Ori Davidov	Eastern Mediterranean Region	7/1/2017	6/30/2021
H. Refik Burgut	Eastern Mediterranean Region	7/1/2017	6/30/2021
Nandita Mitra	Eastern North American Region	7/1/2013	6/30/2021
Dionne Price	Eastern North American Region	7/1/2013	6/30/2021
Brisa Sanchez	Eastern North American Region	7/1/2017	6/30/2021
KyungMann Kim	Eastern North American Region	7/1/2013	6/30/2019
Pascale Tubert-Bitter	French Region	7/1/2015	6/30/2019
Meinhard Kieser	German Region	7/1/2017	6/30/2021
Jürgen Kübler	German Region	7/1/2017	6/30/2021
Katja Ickstadt	German Region	7/1/2015	6/30/2019
Iris Pigeot-Kübler	German Region	7/1/2015	6/30/2019
Stefania Galimberti	Italian Region	7/1/2015	6/30/2019
Takashi Sozu	Japanese Region	7/1/2017	6/30/2021
Masataka Taguri	Japanese Region	7/1/2011	6/30/2021
Shizue Izumi	Japanese Region	7/1/2013	6/30/2019
Henry Kissinger Ochieng Athiany	Kenyan Region	7/1/2017	6/30/2021
Taesung Park	Korean Region	7/1/2015	6/30/2019
Dimitris Rizopoulos	the Netherlands Region	7/1/2015	6/30/2019
E. Tejumola Jolayemi	Nigerian Region	7/1/2011	6/30/2019
Ethelbert C. Nduka	Nigerian Region	7/1/2015	6/30/2019
Dietrich von Rosen	Nordic-Baltic Region	7/1/2015	6/30/2019
Cornelia Enachescu	Romanian Region	7/1/2011	6/30/2019
Miguel-Angel Martinez-Beneito	Spanish Region	7/1/2015	6/30/2019
Nuria Porta	Spanish Region	7/1/2017	6/30/2021
Agnes Kiragga	Ugandan Region	7/1/2017	6/30/2021
Carl J. Schwarz	Western North American Region	7/1/2015	6/30/2019
Antje Hoering	Western North American Region	7/1/2013	6/30/2021
Layla Parast	Western North American Region	7/1/2017	6/30/2021
Betty Mawire	Zimbabwean Region	7/1/2015	6/30/2019

Celebrating Diversity in the International Biometric Society

Beginning with the September 2017 issue and in celebration of our 70th birthday, we've given ***Biometrics*** a facelift with a new design that allows for a rotating image on the front cover. The first image shows participants at the Society's inaugural meeting at Woods Hole, Massachusetts USA, in 1947. You can read more about this on the 'History' tab of the IBS webpage, where you will find an excellent article by Past President, Lynne Billard. The first article of the September issue of ***Biometrics*** also talks about some of this history. One of the striking things about the image (aside from the fashion!) is that the participants are almost all white males. I think I can count five, maybe six women from the approximately 80 attendees. It is harder to assess ethnicity from an old photo like this, but Professor Billard's article suggests that there were at least two Indian delegates at the meetings. As we were planning what to put on this first new Biometrics cover, there was concern about the message it might send. Rather, we recognized that the lack of diversity was unfortunately indicative of those times and needed to be considered in historical context. For this reason, I thought it would be helpful to write this short article reflecting how things have changed over the years and also taking a look at how the IBS looks these days in terms of gender and ethnic diversity. Given our global footprint, it is not surprising to see that the Society has become highly ethnically diverse. The Eastern North American Region (ENAR) has taken a particularly proactive stance, having held a Workshop called "Fostering Diversity in Biostatistics" as part of their annual Spring Meetings for many years now. Interestingly, we don't collect information on gender from our members, so it is not possible to provide figures related to the general membership. However, the International Biometric Office provided me with a spreadsheet listing the names of the Regional Presidents over the past few years, combined with some detective work via Google, allowed me to determine the gender of most of them. Exactly one-third were women. Among the eight most recent elected Presidents of the Society as a whole (including myself), 50% were women. So it is clear that we are heading in the right direction. But of course there is more work to be done. Sadly, I do hear reports from members describing situations where diversity has not been appropriately considered and appreciated. But there are also positives, for example the Australasian Region's efforts to put together an all-female cast of invited speakers for their upcoming meetings. I'm also most appreciative of the efforts of Professor Charmaine Dean and the International Program Committee to put together a slate of invited sessions for ***IBC2018*** that are not only scientifically outstanding but also diverse in terms of gender, ethnicity, country, topic and sector (industry versus government versus academia). All in all, we see that history for the International Biometric Society is a dynamic process whose progress we celebrate in this, our 70th year.



Louise Ryan
IBS President-Elect

PS Do you think that the man in the top left hand corner of the image is talking on a cell phone? Perhaps he was ahead of his time.

BARCELONA IBC 2018

XXIX INTERNATIONAL BIOMETRIC CONFERENCE

Barcelona, 8-13 July, **2018**

CoChairs

Lupe Gómez (Past President SEB, Universitat Politècnica de Catalunya)

Pere Puig (Universitat Autònoma de Barcelona)

Local Organising Committee

Imma Aróstegui (President SEB, Universidad País Vasco)

Malu Calle (Past President SEB, Universitat de Vic)

Ramón Clèries (Vocal Societat Catalana d'Estadistica, ICO)

María Durbán (IP BIOSTATNET, Universidad Carlos III)

Klaus Langohr (Universitat Politècnica de Catalunya, IMIM)

Montse Rué (Universitat de Lleida)

Marc Sáez (Universitat de Girona)

Alex Sánchez (Past President SEB, Universitat de Barcelona)

Isabel Serra (Centre de Recerca Matemàtica)

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Antje Hoering (WNAR)

Ludwig Hothorn (Germany)

Shirley Pledger (New Zealand)

Pere Puig (Spain)

Lola Ugarte (Spain)

Xiao-Hua A. Zhou (China)

Fred van Eeuwijk (The Netherlands)

IBC2018 Call for Papers Now Open!

http://2018.biometricconference.org/

IBC2018 Short Courses and Invited Sessions Announced!

The IBS has announced the ***IBC2018*** short courses being planned for Sunday, 8 July 2018 in Barcelona, Spain, as well as the invited session program. For more information on the five short courses and invited sessions, please visit the conference website: http://2018.biometricconference.org.

IBC2018 Short Courses

Course 1: Mediation Analysis Using R

Theis Lange
University of Copenhagen
Copenhagen, Denmark

Stijn Vansteelandt
Ghent University
Ghent, Belgium

Course 2: Multivariate Dimension Reduction for Biological Data Integration

Kim-Anh Lê Cao
The University of Melbourne
Melbourne, Australia

Sébastien Déjean
Institute of Mathematics, Sabatier University
Toulouse, France

Course 3: The Analysis of Interval-Censored Observations

Emmanuel Lasaffre
University of Leuven
Leuven, Belgium

Arnošt Komárek
Charles University
Prague, Czech Republic

Course 4: Network Meta-Analysis with R

Gerta Rücker
University of Freiburg
Freiburg, Germany

Guido Schwarzer
University of Freiburg
Freiburg, Germany

James R. Carpenter
London School of Hygiene
London, UK

Course 5: Compositional Data Analysis

Josep-Antonio Martín-Fernandez
University of Girona
Girona, Spain

Jan Graffelman
University of Catalonia
Barcelona, Spain

IBC2018 Invited Sessions

Recent developments in the design and analysis of crop variety and breeding trials

Chair: Hans-Peter Piepho (University of Hohenheim, Germany)

Johannes Forkman (SLU, Sweden)
Design and analysis of small complete block experiments when blocks are rows in a rectangle

Emlyn Williams (Australian National University, Australia)
Design considerations for single and multi-location breeding trials: Randomization and efficiency

Fred van Eeuwijk (Wageningen University, the Netherlands)
Modelling spatial trends in field trials by 2D P-splines in a mixed model context

Discussant: Chloe Boyard (Biostat Team Limagrain Europe, France)

Dynamic individualised risk prediction: Recent developments and real world applications

Chair: Ruth Keogh (London School of Hygiene and Tropical Medicine, UK)

Peter Diggle (Lancaster University, UK)
Real-time monitoring of health outcomes using routine clinical data

Angela Wood (University of Cambridge, UK)
Estimating cardiovascular disease risk in electronic health records with incomplete records and repeated measurements of risk predictors

Cecile Proust-Lima (University of Bordeaux, France)
Dynamic individualized predictions of cause-specific disease progression using repeated measures of biomarkers: comparison between joint models and dynamic landmark models and application in prostate cancer

Discussant: Jeremy Taylor (University of Michigan, USA)

Analysis methods using multiple type of -omics measurements

Chair: Charles Kooperberg (Fred Hutchinson Cancer Research Center, USA)

Nancy J. Cox (Vanderbilt University, USA)
Integrating genome with transcriptome for Electronic Health Records discovery

Jeanine Houwing-Duistermaat
(University of Leeds, UK)
Statistical methods for integrated data analysis of multiple omics data sets

Jian Yang (University of Queensland, Australia)
Summary-data based Mendelian randomisation analysis

Hongyu Zhao (Yale University, USA)
Integrative tissue and cell-type specific functional annotations in the human genome provide novel insights on many complex traits

No Discussant

Statistical methods for high throughput phenotyping data in plant sciences

Chair: Fred van Eeuwijk (Wageningen University, the Netherlands)

Scott Chapman (University of Queensland, Australia)
High Throughput Phenotyping in crops – challenges and needs in biometrics

Maria Xosé Rodríguez-Álvarez (Basque Center for Applied Mathematics, Spain)
Spatio-temporal modeling of high-throughput phenotypic data

Hiroyoshi Iwata (University of Tokyo, Japan)
Modelling response of plants to environment via high-throughput phenotyping and machine leaning

Discussant: Fred van Eeuwijk (Wageningen University, the Netherlands)

Functions of variance components in mixed effects models: estimation, confidence intervals, hypothesis tests and boundary issues

Chair: Nino Demetrashvili (National Center for Disease Control and Public Health, Georgia)

Alan Welsh (Australian National University, Australia)
Construction of confidence intervals for the components of variance when the components are close to the boundary of the parameter space

Regev Schweiger (Tel Aviv University, Israel)
Using stochastic approximation techniques to efficiently construct accurate confidence intervals for heritability

Mohamed M. Shoukri (King Faisal Specialist Hospital and Research Centre, Saudi Arabia)
Index of individuality and the determination of the reference range of biochemistry parameters: point, interval estimation and sample size requirements

Barbora Kessel (University of Göttingen, Germany)
TBD

Discussant: Geert Molenberghs (Hasselt University and KU Leuven, Belgium)

Statistical analysis of self-reported outcomes that are subject to measurement error

Chair: Laurence Freedman (Gertner Institute for Epidemiology and Health Policy Research, Israel)

Ruth Keogh (London School of Hygiene and Tropical Medicine, UK)
Statistical issues related to dietary intake as the response variable in intervention trials

David Steinberg (Tel Aviv University, Israel)
Measurement error in calibration sub-studies

Raji Balasubramanian (University of Massachusetts – Amherst, USA)
Variable selection in high dimensional datasets in the presence of error-prone, self-reported outcomes

Juned Siddique (Northwestern University, USA)
Addressing Differential Measurement Error in Self-Reported Dietary Data Using an External Validation Study: Application to a Longitudinal Lifestyle Intervention Trial

No Discussant

Experimental Design as a Framework for Solving Challenging Problems in Clinical Drug Development

Chair: Jesús López-Fidalgo (University of Navarre, Spain)

Holger Dette (Ruhr-Universität Bochum, Germany)
Design and analysis of dose response studies

Nancy Flournoy (University of Missouri, USA)
Statistical implications of early stopping rules imposed on sequential dose-finding studies

Atanu Biswas (Indian Statistical Institute, India)
Optimal covariate adjusted adaptive designs for binary response trials

Katrin Kettelhake & Katrin Roth (Bayer AG Development Pharmaceuticals, Germany)
Experimental Design in Theory and Praxis: Examples from the Pharmaceutical Industry

Weng Kee Wong (UCLA, USA)
Nature-Inspired Meta-heuristic Algorithms for Generating Efficient Designs for Biomedical Problems

Discussant: Vladimir Dragalin (Janssen Pharmaceuticals, USA)

Statistical challenges in family studies: from design to risk prediction

Chair: Mar Rodríguez-Girondo (Leiden University Medical Centre, the Netherlands)

Thomas Scheike (University of Copenhagen, Denmark)
Dependence in risk-level and age-of-onset for competing risks data

Malka Gorfine (Tel Aviv University, Israel)
A fully nonparametric estimator of the marginal survival function based on case–control clustered age-at-onset data

Antonis Antoniou (University of Cambridge, UK)
Developing comprehensive risk prediction models for familial breast and ovarian cancer

Jeanine Houwing-Duistermaat (Leeds University, UK)
Modelling mortality in long lived families

Discussant: Mar Rodríguez-Girondo (Leiden University Medical Centre, the Netherlands)

Adaptive designs with multiple objectives

Chair: Martin Posch (Medical University of Vienna, Austria)

Cyrus Mehta (Cytel & Harvard T.H. Chan School of Public Health, USA)
Design and Monitoring of Multi-Arm Multi-Stage Clinical Trials

Toshimitsu Hamasaki (National Cerebral and Cardiovascular Center, Japan)
Designing complex survival clinical trials with multi-stage and multiple endpoints

Lisa Hampson (AstraZeneca & Lancaster University, UK)
Optimising the data combination rule for seamless Phase II/III clinical trials

Franz König (Medical University of Vienna, Austria)
Decision Theoretic Approaches for Adaptive Enrichment Designs in Personalized Medicine

Discussant: Hans Ulrich Burger (F. Hoffmann – La Roche Ltd., Switzerland)

The Bleeding Edge: advancing statistical methodology through blood sector applications

Chair: Louise M. Ryan (University of Technology Sydney, Australia)

Emmanuel Lesaffre (KU Leuven, Belguim)
Prediction of hemoglobin in blood donors using a latent class mixed-effects transition model

Martin Nieuwoudt (Stellenbosch University, South Africa)
The South African National Blood Donor Services: Analysis and Modeling issues for an undescribed cohort.

Stephen Wright (Australian Red Cross Blood Service & University of Technology Sydney, Australia)
With millions of donors giving blood, can we identify the optimal donor/donation type for a given immediate need?

No Discussant

Modelling grouped environmental and forestry data

Chair: Lauri Mehtätalo (University of Eastern Finland, Finland)

Juha Lappi (University Eastern Finland & University of Jyväskylä, Finland)
Some pitfalls of mixed models

Arne Nothdurft (University of Natural Resources and Life Sciences Institute of Forest Growth, Austria)
Spatial and temporal modelling in forest monitoring

Andrew Finley (Michigan State University, USA)
Bayesian modeling of grouped environmental data

Discussant: Lauri Mehtätalo (University of Eastern Finland, Finland)

Challenges in the Analysis of Observational Cohort Data

Chair: Jerry Lawless (University of Waterloo, Canada)

Richard J. Cook (University of Waterloo, Canada)
Response-dependent sampling and tracing in cohort studies of chronic diseases: methods for design and analysis

Niels Keiding (University of Copenhagen, Denmark)
Observational cohort studies and register data – experiences from Denmark

Daniela De Angelis (University of Cambridge, UK)
Challenges in estimating HIV testing behaviour from observational cohort data

No Discussant

New developments in mediation analysis

Chair: Stijn Vansteelandt (Ghent University & London School of Hygiene and Tropical Medicine, Belgium)

Tyler VanderWeele (Harvard T.H. Chan School of Public Health, USA)
Decomposition analysis to identify intervention targets for reducing disparities

Rhian Daniel (London School of Hygiene and Tropical Medicine, UK)
Mediation analysis with high-dimensional mediators

Xi Luo (Brown University, USA)
Pathway Lasso: Estimate and Select Mediation Pathways with High Dimensional Mediators

Theis Lange (University of Copenhagen & Peking University, Denmark)
Mediation analysis acknowledging that the true mediator is a process, not a (collection) of variables

Discussant: Stijn Vansteelandt (Ghent University & London School of Hygiene and Tropical Medicine, Belgium)

Multi-State Models With Interval-Censored Data

Chair: Klaus Langohr (Polytechnic University of Catalonia, Spain)

Ahmadou Alioum (Université de Bordeaux, France)
Inference in multi-state models for interval-censored data

Montserrat Rúe (Universitat de Lleida, Spain)
Factors associated with health resources utilization in Catalan patients with chronic diseases: A multi-state approach

Andrew Titman (Lancaster University, UK)
Joint models for multi-state models with informative observation processes

No Discussant

Digital technologies and the impact in biometry

Chair: Renato Assunção (Universidade Federal de Minas Gerais, Brazil)

Maged N. Kamel Boulos (University of the Highlands and Islands, Scotland)
VRGIS and big data for smarter, healthier cities

Joanna Mills Flemming (Dalhousie University, Canada)
Robust and Consistent Estimation for General State-Space Models with Application to Problems in Fisheries Science and Movement Ecology

Gilberto Câmara (Instituto Nacional de Pesquisas Espaciais (INPE), Brazil)
Challenges in big Earth observation data mining

Discussant: Arthur Charpentier (Université de Rennes 1, Canada)

Statistical methods and challenges in microbiome research

Chair: M. Luz Calle (University of Vic – Central University of Catalonia, Spain)

Hongzhe Li (University of Pennsylvania, USA)
Compositional Mediation Analysis in Microbiome Studies

Kim-Anh Lê Cao (University of Queensland, Australia)
Multivariate projection-based methods to uncover the role of microbiome

Susan Holmes (Stanford University, USA)
TBD

Discussant: M. Luz Calle (University of Vic – Central University of Catalonia, Spain)

Design-based and model-based inference in environmental and natural resources surveys

Chair: Svetlana Saarela (Swedish University of Agricultural Sciences, Sweden)

Timothy G. Gregoire (Yale University, USA)
The Use of Mixed Effects Models for Obtaining Low-Cost Ecosystem Carbon Stock Estimates in Mangroves of the Asia-Pacific

Ronald E. McRoberts (USD Forest Service, USA)
Comparing optimal design criteria for model-based adaptive sampling

Mark J. Ducey (University of New Hampshire, USA)
Design-based inference: is it still relevant in the 21st century?

Annika Kangas (Natural Resources Institute Finland, Finland)
Model-assisted estimation for small areas

Discussant: Svetlana Saarela (Swedish University of Agricultural Sciences, Sweden)

Quantifying and Communicating Uncertainty in Agricultural Modelling

Chair: Petra Kuhnert (Commonwealth Scientific and Industrial Research Organisation (CSIRO) Data61, Australia)

Dan Gladish (CSIRO Data61, Australia)
Uncertainty in complex agricultural simulators – is emulation the answer?

Bill Leeds (The Climate Corporation, USA)
From the ground up: Data Science to Agronomic Insight

Daniela Bustos Korts (Wageningen University, the Netherlands)
The role of crop growth models in the evaluation of genetic interventions and phenotyping strategies

Petra Kuhnert (CSIRO Data61, Australia)
Developing an uncertainty toolbox for Agriculture

Discussant: Bronwyn Harch (Queensland University of Technology, Australia)

Biometrics

December 2017 Issue Highlights

The December issue features articles across a broad spectrum of applications and methodology. Included in the ***Biometric Methodology*** section are "Outcome-adaptive lasso: variable selection for causal inference," by Susan M. Shortreed and Ashkan Ertefai; "Groupwise envelope models for imaging genetic analysis," by Yeonhee Park, Zhihua Su, and Hongtu Zhu; "Instrumental variables estimation of exposure effects on a time-to-event endpoint using structural cumulative survival models," by Torben Martinussen, Stijn Vansteelandt, Eric J. Tchetgen Tchetgen, and David M. Zucker; "Bayesian response-adaptive designs for basket trials," by Steffen Ventz, William T. Barry, Giovanni Parmigiani, and Lorenzo Trippa; and "Weighted pseudo-likelihood for SNP set analysis with multiple secondary outcomes in case-control genetic association studies," by Tamar Sofer, Elizabeth D. Schifano, David C. Christiani, and Xihong Lin.

The ***Biometric Practice*** section features "Bayesian population finding with biomarkers in a randomized clinical trial," by Satoshi Morita and Peter Mueller; "A fast small-sample kernel independence test for microbiome community-level association analysis," by Xiang Zhan, Anna Plantinga, Ni Zhao, and Michael C. Wu; "Sensitivity analysis for matched pair analysis of binary data: From worst case to average case analysis," by R. Hasegawa and D. Small; and "Parametric overdispersed frailty models for current status data," by Steven Abrams, Marc Aerts, Geert Molenberghs, and Niel Hens.

As always, lists of papers to appear can be found at the ***Biometrics*** website. Papers to appear in future issues may also be found under the "Early View" link at the Wiley-Blackwell website, which may be accessed by IBS members by visiting http://www.biometricsociety.org/, selecting "Biometrics" from the drop-down menu at the "Publications" link at the top of the page, and accessing the "Click here" link.

Biometrics Cover Image

Incoming IBS President Louise Ryan has spearheaded an exciting initiative for the journal. Starting with the ***September 2017*** issue, the slightly re-vamped cover of ***Biometrics*** will feature a rotating image related to an article appearing in the issue; the image might be a photo, a graphic or other depiction and will change with each issue. A short description of the cover image will appear with the table of contents. A process for identification and selection of the cover image for each issue is currently being formulated, and the Executive Editor will have responsibility for overseeing this process.

Biometrics was founded in 1945 as ***Biometrics Bulletin***, and became ***Biometrics*** in 1947, the year the IBS was founded as the Biometric Society. The first ***International Biometric Conference (IBC)*** was held in September of that year at the Marine Biological Labs at Woods Hole, Massachusetts, USA; accordingly, 2017 is the 70th anniversary of the founding of the Society. The inaugural cover image (September 2017) thus features a special 70th anniversary logo, and the cover image is a photograph of delegates to the conference.

Editorial Board News

As we reported previously, Co-editor Mike Daniels' term will end 31 December 2017. According to geographic convention, the new Co-editor should reside in North America. We are delighted to report that the search committee nominated Debashis Ghosh, Professor and Chair of the Department of Biostatistics and Informatics at the Colorado School of Public Health at the University of Colorado Anschutz Medical Campus, Aurora, Colorado, USA, and a ***Biometrics*** AE, as the next CE. The nomination was approved by the IBS Executive Board. Debashis's term will be 1 January 2018 – 31 December 2020. We look forward to working with him.

We welcome several new AEs to the Editorial Board with terms beginning 1 July or later: Marco Carone, Phil Dixon, Yair Goldberg, Paul Gustafson, Ruth King, Eric Laber, Russell (Taki) Shinohara and Peter Thall.

We also recognize AEs who have retired from the Editorial Board in 2017: Harald Binder, Ken Cheung, Lieven Clement, Diana Cole, Richard Cook, Kevin Dobbin, Shinto Eguchi, Niel Hens, Debashis Ghosh, Andy Houseman, Ben Reiser, Shaun Seaman, Ana-Maria Staicu, Rajeshwari Sundaram, Roula Tsonaka, Lu Wang and Ernst Wit.

As we reported in the last column, Geert Molenberghs will take over as Executive Editor (EE) on 1 January 2018 for a three-year, renewable term. Geert will succeed Marie Davidian, who has served as EE since 2006. Geert and Marie have been working together to ensure an orderly and seamless transition. In light of this, we repeat below a review of the role of the EE that appeared in the July – September 2016 issue of the ***Biometric Bulletin***.

The Executive Editor Position

The official description of the EE position, as approved by the former IBS Council, is as follows. "The Executive Editor of ***Biometrics*** shall coordinate the activities of the three scientific Co-editors to ensure consistency of practices and performance and to achieve scientific balance in terms of manuscript assignments. S/he shall also oversee all administrative functions, including monitoring journal performance and working with the journal Editorial Manager, IBS Officers, the International Business Office (IBO) and the Publisher."

Thus, the EE is not the "head editor;" rather, s/he serves in an administrative role on equal footing with the CEs, complementing their efforts to oversee the scientific aspects of the journal and freeing them from the burden of administrative activities. As such, the EE is not to be involved in scientific activities related to review of and editorial decisions on papers submitted to the journal; these are the sole purview of the CEs. The only scientific duty of the EE is to assign incoming submissions to CEs on the basis of scientific expertise and workload; thereafter, s/he plays no role in the fate of submissions. Otherwise, the EE has a purely administrative role, with duties including compiling and monitoring journal performance statistics, arranging editorial board meetings and handling the logistics of Biometrics-sponsored events, working with the publisher, serving as the liaison to the IBS and writing reports such as this one.

Frequently, authors contact the EE directly, expressing dismay over a CE's scientific decision on a particular submission and requesting the EE's intervention, with the expectation that the EE can review and overrule CE actions and decisions. As should be clear from the above description, the EE has no such authority in such scientific matters. Likewise, authors contemplating a submission to ***Biometrics*** sometimes contact the EE, asking for a "pre-screen" of the paper's suitability for the journal. Again, this determination is a scientific issue outside the realm of the EE's charge and can only be made by a CE once the paper has been formally submitted. In short, contacting the EE regarding scientific matters is fruitless, as the position carries no mandate for involvement in such situations.

All queries or comments directed to the EE and CEs should not be sent to them at their personal email addresses but rather should be sent to the journal Editorial Manager, Ms. Ann Hanhart, at biometrics@tibs.org. Please do not attempt to contact any of the Editors by telephone, as journal policy prevents them from discussing editorial matters directly with authors or readers.

Journal of Agricultural, Biological, and Environmental Statistics (JABES)

We are currently discussing ways to raise the profile of the journal. We plan to open a ***Twitter*** account shortly and will invite authors of accepted papers to submit a tweet, summarising their paper. Announcements, such as calls for papers for ***Special Issues***, will also be made through tweets. Authors will also be given the option of submitting a press release to coincide with publication of their paper. This might be appropriate for papers that address issues of interest beyond the statistical community.

The Special Issue on Animal Movement Modeling, with Mevin Hooten, Ruth King and Roland Langrock as Guest Editors, will appear in the September issue. It comprises nine articles by authors at the cutting edge of model development in response to technological changes, together with an introduction putting the modeling in context by the guest editors.

If you have a suggestion for a special issue, I would be pleased to hear from you. We are also keen to publish papers that summarize the state of methodological development in subject areas for which technological advances are generating a demand for new statistical approaches. If such papers also speculate on likely future developments, so much the better. If you feel that you could offer such a paper or can suggest a topic together with possible authors, please let me know.

The June issue of ***JABES*** included the following papers: "Bayesian methods for estimating animal abundance at large spatial scales using data from multiple sources" by S. Dey, M. Delampady, R. Parameshwaran, N.S. Kumar, A. Srivathsa and K.U. Karanth; "Bringing it all together: multi-species integrated population modelling of a breeding community" by J.J. Lahoz-Monfort, M.P. Harris, S. Wanless, S.N. Freeman and B.J.T. Morgan; "A statistical method to construct confidence sets on carrion insect age from development stage" by L.R. LaMotte, A.L. Roe, J.D. Wells and L.G. Higley; "Application of whole-genome prediction methods for genome-wide association studies: a Bayesian approach" by R. Fernando, A. Toosi, A. Wolc, D. Garrick and Jack Dekkers and "Water flow probabilistic predictions based on a rainfall–runoff simulator: a two-regime model with variable selection" by M. Courbariaux, P. Barbillon and É. Parent.

For more information on upcoming issues, the editorial board, and the aim and scope of the journal, please visit our website http://link.springer.com/journal/13253. We also accept submissions of books to review in the upcoming issues of ***JABES***; to submit a book for review, please see the above website (click on "Editorial Board") or contact Ken Newman (ken_newman@fws.gov).

Steve Buckland
Editor in Chief

Software Corner

Visualizing and interpreting interactions in logistic regression models

Havi Murad[1] and Garth Tarr[2]
[1]Biostatistics Unit, Gertner Institute, Israel (EMR)
[2]University of Newcastle, Australia (AR)

Associations in logistic regressions are usually expressed as odds ratios, which is the ratio of the odds for an event given a specific category of the predictor to the odds given a reference category, for a categorical predictor, and the ratio of the odds for an event for c units increase in a continuous predictor. Explanation of significant interactions among continuous predictors can be particularly complicated. Graphs created by the EFFECTPLOT statement in the Logistic Procedure (SAS 9.4), using the CONTOUR and SLICEFIT options, can help in the visualization and interpretation of interactions. In R, packages such as lsmeans and visreg can similarly aid interpretation, the equivalent R plots are shown below their SAS counterparts, and the R code can be found at the end of the article.

The following example is taken from the ***Birth Weight Data*** from SAShelp Data Sets. There are 50,000 records. Each row gives information about the birth weight of a baby and includes information about the mother. We used the following variables:

- MomAge: The mothers were between the ages of 18 and 45. The MomAge variable is centered at the mean age, which is 27. Thus MomAge=-7 means the mother was 20 years old, whereas MomAge=5 means that the mother was 32 years old.
- CigsPerDay: The average number of cigarettes per day that the mother smoked during pregnancy. This takes the values ranging between 0 and 60. We used it as a continuous predictor.
- Boy: An indicator variable for a baby boy.
- Underweight: The binary outcome was defined as an indicator variable for an underweight baby, i.e. an indicator for weight<2500 g.

Applying a binary logistic regression to these data with the outcome underweight baby (1 or 0) we found significant interactions between CigsPerDay and MomAge and between CigsPerDay and Boy. The interaction between MomAge and Boy was found to be non-significant.

Analysis of Maximum Likelihood Estimates					
Parameter	**DF**	**Estimate**	**Standard Error**	**Wald Chi-Square**	**Pr>Chi-Sq.**
Intercept	1	-2.8605	0.0295	9393.8410	<.0001
Mom Age	1	-0.0151	0.00373	16.4585	<.0001
Cigs Per Day	1	0.0572	0.00404	200.4376	<.0001
Mom Age *Cigs Per Day	1	0.00178	0.000510	12.1297	**0.0005**
Boy 1	1	-0.1116	0.0422	6.9934	0.0082
Cigs Per Day *Boy 1	1	-0.0230	0.00606	14.4292	**0.0001**

The meaning of the main effects in the presence of interactions is different than their meaning in a main effects only model. For example the main effect of mother's age is in the subgroup of non-smoking mothers. An increase of 5 years in the mother's age is expected to reduce the odds for an underweight baby by 7% in non-smoking mothers.

The main effect of Boy is again in the subgroup of non-smoking mothers. The odds for an underweight baby boy are lower by 11% than the odds for an underweight baby girl .

The following SAS code with the EFFECTPLOT SLICEFIT statement produced Figure 1.

```
ods graphics on;
proc logistic data=babyWeight;
class Boy (param=ref ref=first);
model Underweight(event='1') = MomAge|CigsPerDay Boy
Boy*CigsPerDay;
  store logiModel;
effectplot slicefit(sliceby=CigsPerDay  plotby(rows)=boy);
```

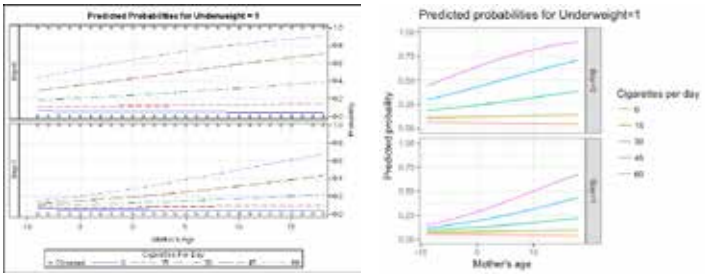


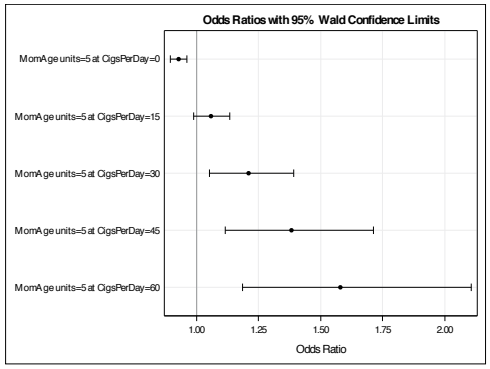
Figure 1: Predicted Probability for an underweight baby by MomAge, sliced by CigsPerDay for girls and boys. SAS output on the left and R on the right. R code can be found at the end of the article.

Figure 1 shows that at each age of the mother an increase in the number of cigarettes smoked per day during pregnancy increases the predicted probability for an underweight baby. It also shows that independently of the mother's age, the positive association between number of cigarettes per day and underweight baby is stronger in baby girls. To illustrate the interaction between MomAge and CigsPerDay using odds ratios, the oddsratio statement in the Logistic Procedure can be used as follows:

```
oddsratio Momage/AT (CigsPerDay=0, 15, 30, 45, 60);

units Momage=5;
```

Odds Ratio Estimates and Wald Confidence Intervals			
MomAge units=5 at CigsPerDay=0	**Estimate**	**95% Confidence Limits**	
MomAge units=5 at CigsPerDay=15	0.927	0.894	0.962
MomAge units=5 at CigsPerDay=30	1.059	0.988	1.136
MomAge units=5 at CigsPerDay=45	1.210	1.052	1.392
MomAge units=5 at CigsPerDay=60	1.383	1.117	1.712
MomAge units=5 at CigsPerDay=60	1.580	1.185	2.106



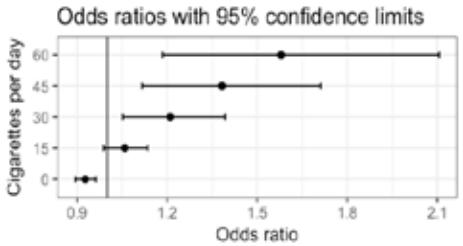


Figure 2: Odds ratio for an underweight baby for a five year increase in the age of the mother (unit=5), sliced by number of cigarettes smoked per day. Upper graph is from SAS and the second graph is from R.

An additional Oddsratio statement as follows can illustrate the two interactions with CigsPerDay (Figure 3).

```
oddsratio CigsPerDay / AT (Momage=-10, 0,10);

units CigsPerDay =15;
```

Odds Ratio Estimates and Wald Confidence Intervals			
Odds Ratio	**Estimate**	**95% Confidence Limits**	
CigsPerDay units=15 at MomAge=-10 Boy=0	1.808	1.485	2.200
CigsPerDay units=15 at MomAge=-10 Boy=1	1.280	1.042	1.572
CigsPerDay units=15 at MomAge=0 Boy=0	2.360	2.095	2.658
CigsPerDay units=15 at MomAge=0 Boy=1	1.671	1.463	1.909
CigsPerDay units=15 at MomAge=10 Boy=0	3.080	2.557	3.710
CigsPerDay units=15 at MomAge=10 Boy=1	2.181	1.795	2.651

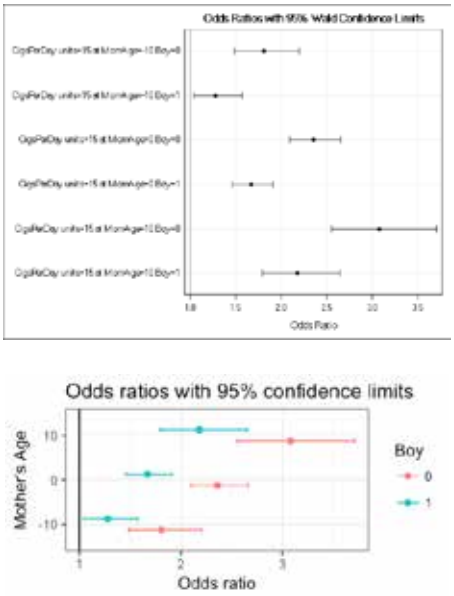


Figure 3: Odds ratio for an underweight baby for an increase of 15 cigarettes per day during pregnancy, by baby's gender at specific ages of mother. Upper graph is from SAS and the second graph is from R.

Figure 2 shows that the odds ratios for an underweight baby for a five year increase in the age of the mother increase according to the number of cigarettes smoked by the mother per day. Figure 3 shows that the odds ratios for an underweight baby for an increase of 15 cigarettes per day are higher when the baby is a girl compared to a baby boy. This finding is independent of the mother's age, i.e. the increase in the odds for a 15 cigarette increase, when the baby is a girl versus a boy, is about 24% for each mother's age. This increase is fixed since the interaction between mother's age and baby's gender was not significant.

The following additional EFFECTPLOT CONTOUR statement within the Logistic Procedure yielded the Contour graph presented in Figure 4:

```
effectplot contour (x=MomAge y=CigsPerDay plotby=Boy)/noobs;
```

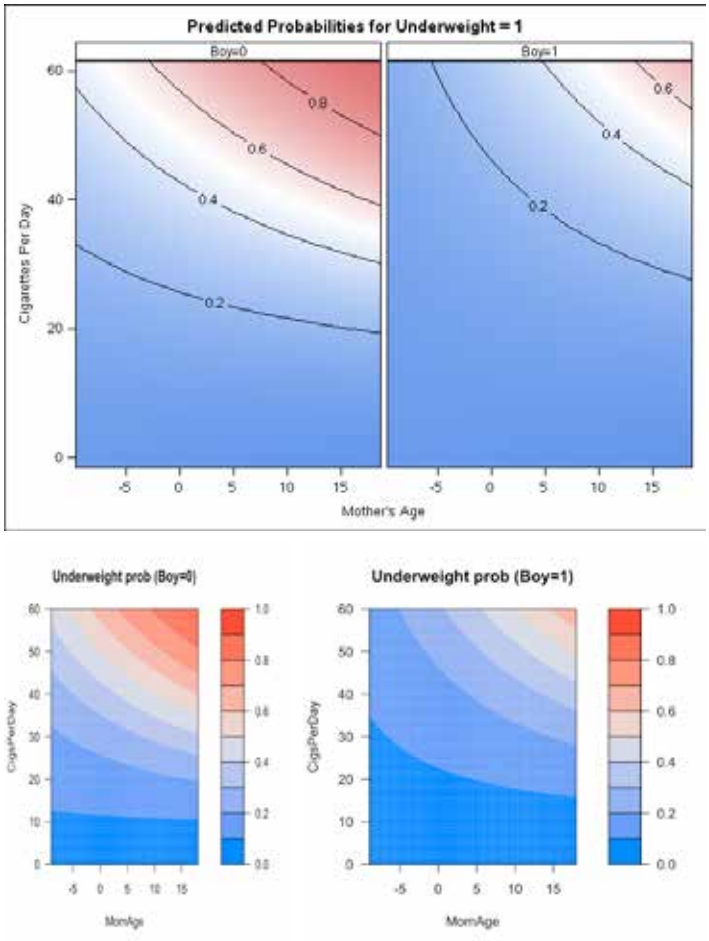


Figure 4: Contour graph. Upper graph is from SAS, and the second graph is from R.

In conclusion, both SAS and R are capable of generating informative visualizations to help interpret interactions in logistic regression models. While one might argue that the graphs from R are more attractive, they do require more effort to obtain (see code appendix), whereas the graphs from SAS are easy to produce using a simple statement within the Logistic Procedure.

For additional examples applied to the Titanic Data see Downer (2013) for SAS users, and Fox and Hong (2009) for R users.

References

Downer, R. G. (2013). Improved Interaction Interpretation: Application

of the EFFECTPLOT statement and other useful features in PROC LOGISTIC . Paper AA08- 2013, Proceedings of the SAS global Forum Conference 2013. Cary, NC: SAS Institute Inc. https://www.mwsug.org/proceedings/2013/AA/MWSUG-2013-AA08.pdf.

Lenth R.V. (2016). Least-Squares Means:The R Package lsmeans. Journal of Statistical Software, 69(1), 1-33. doi:10.18637/jss.v069.i01.

Breheny P. and Burchett W. (2017). visreg: Visualization of Regression Models. R package version 2.4-1. https://CRAN.R-project.org/package=visreg.

Fox, J. and Hong, J. (2009). Effect Displays in R for Multinomial and Proportional-Odds Logit Models: Extensions to the effects Package. Journal of Statistical Software, 32(1), 1 - 24. doi:http://dx.doi.org/10.18637/jss.v032.i01.

http://data.library.virginia.edu/visualizing-the-effects-of-proportional-odds-logistic-regression/.

Appendix: R code

```
model = glm(Underweight ~ MomAge*CigsPerDay + Boy*CigsPerDay, data = x,family=binomial(link='logit'))

# Figure 1

library(lsmeans)

library(tidyverse)

ls1 = lsmeans(model, ~ Boy | MomAge + CigsPerDay,

            at=list(CigsPerDay=c(0,15,30,45,60),MomAge = c(-9:18), Boy = factor(c(0,1))),

            type = "response")

ls1_df = data.frame(summary(ls1))

ls1_df %>%

  ggplot(aes(x = MomAge,y = prob, colour = factor(CigsPerDay))) +

  geom_line() + facet_grid(Boy~.) + coord_cartesian(ylim=c(0,1)) + theme_bw() +

  labs(x = "Mother's age", y = "Predicted probaility",

       colour = "Cigarettes per day", title = "Predicted probabilities for Underweight=1")

# Figure 2

or1 = lsmeans(model, ~ MomAge | CigsPerDay, type = "response",

                        at=list(CigsPerDay=c(0, 15, 30, 45, 60), MomAge = c(5, 0)))

CI1 = data.frame(confint(pairs(or1)))

CI1 %>%

    ggplot(aes(x = factor(CigsPerDay), y = odds.ratio)) +

    geom_point() +

    geom_errorbar(aes(ymin = asymp.LCL, ymax = asymp.UCL),width=0.2) +

    coord_flip() + theme_bw() +

    labs(title = "Odds ratios with 95% confidence limits",

            y = "Odds ratio",

            x = "Cigarettes per day") +

    geom_hline(yintercept = 1)

# Figure 3

or2 = lsmeans(model, ~ CigsPerDay | MomAge + Boy , type = "response",

                        at=list(CigsPerDay=c(15, 0), MomAge = c(-10, 0, 10), Boy=factor(c(0, 1))))

CI2 = data.frame(confint(pairs(or2)))

CI2 %>%

    ggplot(aes(x = factor(MomAge), y = odds.ratio, colour = factor(Boy))) +

    geom_point(position = position_dodge(0.5)) +

    geom_errorbar(aes(ymin = asymp.LCL, ymax = asymp.UCL),

                        position = position_dodge(0.5),

                        width=0.2) +

    coord_flip() + theme_bw() +

    labs(title = "Odds ratios with 95% confidence limits",

            y = "Odds ratio",

            x = "Mother's Age",

            colour = "Boy") +

    geom_hline(yintercept = 1)

# Figure 4

library(visreg)

visreg2d(model, xvar = "MomAge", yvar = "CigsPerDay", scale = "response", cond = list(Boy = 0), zlim= c(0, 1), main = "Underweight prob (Boy=0)", levels = seq(0, 1, 0.1))

visreg2d(model, xvar = "MomAge", yvar = "CigsPerDay", scale = "response", cond = list(Boy = 1), zlim= c(0, 1), main = "Underweight prob (Boy=1)", levels = seq(0, 1, 0.1))
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First in a Series of Papers for the Biometric Bulletin

STRATOS initiative – Guidance for designing and analyzing observational studies

Chair of the STRATOS Initiative: Dr. Willi Sauerbrei, Institute for Medical Biometry and Statistics Medical Center - University of Freiburg.

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Statistical methodology has seen substantial development in recent times. For example, techniques have been developed to handle problems caused by missing data and to counterbalance biases caused by measurement error, two issues occurring in many observational studies. In the context of survival data, analysis methods have been developed to investigate the effect of recurrent events or to conduct joint modeling of time-to-event and longitudinal changes to assess markers of disease progression. Unfortunately, many of these developments are often ignored in practice. Even worse, 'standard' analyses reported in the medical literature are often based on unrealistic assumptions or use unsuitable methods, casting doubt on their results and conclusions. To help bridge the gap between methodological innovation and applications, the STRengthening Analytical Thinking for Observational Studies (STRATOS) initiative was launched in 2013. It aims to provide statistical guidance for key topics in the design and analysis of observational studies. In practice, many analyses are conducted by researchers with limited statistical background. Consequently, STRATOS plans to develop guidance for researchers with different levels of statistical knowledge to help improve the statistical quality when analyzing data from observational studies (Sauerbrei et al 2014, www.http://stratos-initiative.org/).

Appropriate statistical methods are key to translating raw empirical data into new insights and deeper understanding of complex processes affecting human health, the economy, environment, etc. Yet, the complexities of such processes, and of the observable data they generate, create numerous analytic challenges. In the 21st century, progress in the theory of mathematical statistics and expansion of computational resources and technology led to rapid developments in statistical methodology, resulting in a large number of increasingly complex and more flexible statistical techniques and models. For example, the prediction of survival probabilities for patients with cancer or other diseases. In such applications, researchers are confronted with at least three interrelated 'main' statistical challenges (a) which variables are 'stronger' predictors of the outcome (more than 20 variable selection techniques have been proposed), (b) what functional form should be used to model continuous predictors (e.g., a linear relationship; categorization is popular, but the definition of the categories need to be determined; fractional polynomials have gained some popularity and many spline based approaches have been proposed) and (c) is the commonly used Cox proportional hazards (PH) model suitable (alternatives have been proposed including flexible parametric models) and is the PH assumption consistent with the data (extensions to models allowing time-varying effects exist). Methods to handle these interrelated challenges are available, but often these important developments are ignored in every-day practice of data analysis. Consequently, the design and analysis of observational studies, which can be complex and costly, may have serious weaknesses, resulting in misleading inferences and incorrect conclusions. For examples, see section 3.1 in Sauerbrei et al (2014).

During the last two decades several initiatives were started with the aim of improving the research process in the health sciences. Substantial progress was made concerning transparent and complete reporting in order for readers to be able to judge the usefulness of data, the suitability of the analysis and to interpret study results in the appropriate context. Several groups have developed reporting guidelines for different types of studies, with the EQUATOR network (www.equator-network.org) providing a repository for these guidelines (Simera et al 2010).

However, what is lacking is guidance for the design and analysis of observational studies where the improvement of research depends on better practical implementation of appropriate statistical methods. The STRATOS initiative has started to work on developing guidance which will cover issues such as improving the awareness of potential pitfalls due to inappropriate use of conventional methods, the choice of appropriate validated methods of analysis able to overcome specific challenges in the data and the identification of statistical software that can be used to implement these more advanced methods. It is one of the fundamental objectives of STRATOS to develop guidance for researchers with different levels of statistical

training, skills and experience. We will start with guidance which points to methodology that is useful for most experienced statistical researchers. Such guidance will then be adapted to educate applied researchers with less statistical knowledge, which may include clinicians and medical students. Finally, experts in specific areas will work to identify current gaps in knowledge and improve, validate and compare existing methods, which will then be incorporated into guidance for the other lower two levels.

To develop such guidance requires a well-structured, highly interactive collaboration between a large, international group of experts in statistical issues and methodology in clinical epidemiology, whose research combines development of new methodology with collaborative research on real-life applications and whose joint, complementary expertise covers different areas of statistical research. At present, particular challenges are being addressed by leading authorities in different areas of statistical research, but little effort is invested in making the results of these separate developments accessible and ensuring their application in practice. In addition, many researchers concentrate on developing new and more complicated methods, but knowledge about their properties and relative strengths and weaknesses is often inadequate, since meaningful comparisons of the available approaches are insufficient, and therefore evidence based guidance for users is lacking. As an example, triggered by the intention to derive suitable 'omics' predictors (often called gene signature) in high-dimensional data, various variable selection techniques were proposed during the last two decades, adding to the long list of more traditional approaches already available during the second half of the last century. Researchers need to choose one (or more) of these strategies to conduct an analysis. Meaningful studies, including simulations, are needed to compare these procedures, provide evidence on their advantages and disadvantages and develop recommendations to guide practicing researchers in selecting a suitable approach. This environment provided the motivation for, and driving vision behind, the STRATOS initiative.

STRATOS currently has nine topic groups (TGs) (Table 1), all of which include between 8 – 12 members. Further details are available in Sauerbrei et al 2014 and on the STRATOS website. Ten cross-cutting panels have been created to coordinate the activities of different TGs, share best research practices and disseminate research tools and results across TGs (Table 2). These panels address common issues such as creating a glossary of statistical terms, giving advice on how to conduct literature reviews and simulation studies and setting publication policies for the initiative. The recommendations of the cross-cutting panels are intended to support, integrate and harmonize work within and across the TGs and to increase transparency in producing guidance.

Summary and Outlook

STRATOS is an initiative that aims to provide statistical guidance for key topics in the design and analysis of observational studies. Statistical research, including simulation studies, is needed to assess competing statistical approaches which can then be used to develop such guidance. Ongoing research, discussions and activities within STRATOS are conducted in the nine topic groups and ten panels. The structure of STRATOS is designed to make the resulting guidance broadly useful through collaboration with clinicians, applied researchers, scientific societies and related projects and initiatives. STRATOS is focused on health sciences but is relevant for all areas of empirical science, e.g. econometrics, life and physical sciences, social sciences, engineering..

The emergence of "Big Data" is an additional issue relevant for STRATOS. However, big data poses particular challenges and opportunities and encompasses diverse areas and data sources. Therefore, STRATOS has decided that big data will not be a topic group by itself but will be considered and related to by all TGs.

To improve statistical methodology and its transparency, statistical researchers must put more emphasis on comparing competing strategies and must generate evidence to support state-of-the-art methodologies. They must also provide guidance that is appropriate for the large community of data analysts with wide range of statistical knowledge and experience.

In the next issues we will publish a series of short articles regarding each of the nine TGs. In each article we will give a general description of the TG, the aims of the group and a few examples that illustrate good statistical practice on the topic of interest.

References

Sauerbrei W, Abrahamowicz M, Altman DG, le Cessie S and Carpenter J on behalf of the STRATOS initiative. (2014) STRengthening Analytical Thinking for Observational Studies: the STRATOS initiative. Statistics in Medicine, 33: 5413-5432.

Simera I, Moher D, Hirst A, Hoey J, Schulz KF, Altman DG. Transparent and accurate reporting increases reliability, utility, and impact of your research: reporting guidelines and the EQUATOR Network. BMC 2010. Med (8): 24.

Table 1. Topic Groups and Their Chairs

Topic Groups	Chairs
1 Missing data	James Carpenter (UK), Katherine Lee (Australia)
2 Selection of variables and functional forms in multivariable analysis	Michal Abrahamowicz (Canada), Aris Perperoglou (UK), Willi Sauerbrei (Germany)
3 Initial data analysis	Marianne Huebner (USA) , Saskia le Cessie (the Netherlands), Werner Vach (Germany)
4 Measurement error and misclassification	Laurence Freedman (Israel), Victor Kipnis (USA)
5 Study design	Suzanne Cadarette (Canada), Mitchell Gail (USA)
6 Evaluating diagnostic tests and prediction models	Gary Collins (UK), Carl Moons (the Netherlands), Ewout Steyerberg (the Netherlands)
7 Causal inference	Els Goetghebeur (Belgium), Ingeborg Waernbaum (Sweden)
8 Survival analysis	Michal Abrahamowicz (Canada), Per Kragh Andersen (Denmark), Terry Therneau (USA)
9 High-dimensional data	Lisa McShane (USA), Joerg Rahnenfuehrer (Germany)

Table 2. Panels, Their Chairs and Co-chairs

Panels	Chairs and Co-chairs
Membership (MP)	James Carpenter (UK), Willi Sauerbrei (Germany)
Publications (PP)	Bianca De Stavola (UK) , Mitchell Gail (USA), Petra Macascill (Australia), Stephen Walter (Canada)
Website (WP)	Joerg Rahnenfuehrer (Germany), Willi Sauerbrei (Germany)
Glossary (GP)	Simon Day (UK) , Marianne Huebner (USA) , Jim Slattery (UK)
Simulation Studies (SP)	Michal Abrahamowicz (Canada), Harald Binder (Germany)
Contact Organizations (CP)	Douglas Altman (UK) , Willi Sauerbrei (Germany)
Literature Review (RP)	Gary Collins (UK), Carl Moons (the Netherlands)
Data Sets (DP)	Hermann Huss (Germany), Saskia Le Cessie (the Netherlands), Aris Perperoglou (UK)
Knowledge Translation (TP)	Suzanne Cadarette (Canada), Catherine Quantin (France)
Bibliography (BP)	To be determined

Mathematical Riddle

Let's see if you can solve this riddle – ***What is the largest number you can create by moving only two matches? The digits in this number should be similar in size. You are not allowed to change the place of digits, just to move two matches.***

** Please ignore the Hebrew! IBS does not reserve the rights for this riddle.*

Please send answers to *HaviM@gertner.health.gov.il*. The first five people to answer correctly will be mentioned in the next issue of the ***Biometric Bulletin***. Please also email interesting riddles to be published in future issues.

Region News

Australasian Region(AR)

Australasian Regional Conference

The next regional conference of the Australasian Region, titled "Biometrics by the Border", is to be held from 26 – 30 November in Kingscliff, NSW, at the Mantra on Salt Beach. Registration and abstract submission is now open: http://www.biometric2017.org.

The all-female line-up of keynote speakers celebrates achievements by women in the field of biometrics. We are excited to confirm that Elisabetta Carfagna (University of Bologna), Di Cook (Monash University), Rachel Fewster (University of Auckland), Sonja Greven (LM University Munich), Louise Ryan (University of Technology Sydney) and Jean Yang (University of Sydney) are sharing their latest insights in their respective fields. We will also be joined by IBS President Elizabeth Thompson.

Three pre-conference workshops are being offered: "Spatio-Temporal Statistics with R" presented by Chris Wikle and Petra Kuhnert (25 – 26 November), "Use of geospatial technology for agriculture & agri-environmental statistics" presented by Elisabetta Carfagna (26 November) and "Exploring data and models visually" presented by Di Cook (26 November).

The venue provides a range of accommodation types and budgets. It is adjacent to a great surf beach which is patrolled during that period. The Local Organising and Programme Committees are working hard to make this a conference you will appreciate attending from both a social and science perspective.

Further information is available on the conference website: http://www.biometric2017.org.

Mantra on Salt Beach (Gold Coast, Australia), the venue of "Biometrics by the Border".

Vanessa Cave

Brazilian Region (RBras)

The 2017 ***RBras Annual Meeting, the 62nd RBras***, was jointly held with the ***17th Symposium on Statistics Applied to Agronomic Experimentation*** (SEAGRO) from 24 – 28 July 2017 by the Department of Statistics of the 'Universidade Federal de Lavras', MG, Brazil.

The theme of the meeting was "Recurrent challenges of applied statistics: making sense of big data". Once again this was a very lively meeting gathering around 435 people from whom more than 60% were students (66% research and 34% undergraduate students). Professor John Hinde, representing the IBS, gave the opening address on "Translational Statistics: Relevance, Reproducibility and Communication".

There were several invited paper sessions, one roundtable, two showcases, seven short courses and two tutorials, as well as contributed paper sessions and poster sessions – these summing to 380 contributions. There were activities for all tastes, such as statistics in medicine, biology, environment, agriculture and forestry to cite some of the applications. Attendees left Lavras applauding the Local Organizing Committee that once more put together a very interesting program and brought to Brazil around twelve international speakers and hundreds of Brazilians from very far away. Thanks go to Julio Bueno and Izabela Oliveira (UFLA, Lavras), Local Committee Chairs, for providing all the stats above.

RBras attendees in the main lecture room.

Closing of the meeting.

The Local Organizing Committee, including students that took welcoming the outsiders very seriously.

At this time the Region elected two members for its Council for the period of 2017 – 2019. RBras President Alessandro Dal'Col Lúcio welcomed Luiz Alexandre Peternelli, re-elected, and Anderson Oliveira for taking the places.

During this meeting the President put under discussion two particularly important proposals: 1) the establishment of the ***RBras Outstanding Award*** with the objective of recognition to those members offering outstanding contributions to the development of the RBras; and 2) the institution of a financial fund that will offer travel support for RBras student members to attend conferences sponsored by the Region. Both proposals were received enthusiastically by the members and approved by unanimity.

To finish we are glad to announce that next year the ***Annual RBras Meeting*** will happen in Curitiba, Paraná state.

Further information will appear in http://www.rbras.org.br. Looking forward to meet you all there!

Luzia Trinca

Dutch Region (ANed)

BMS-ANed Spring Meeting 2017

The ***2017 Spring Meeting*** on June 6 was organized around the Hans van Houwelingen award winning paper "Dynamic frailty models based on compound birth-death processes", by Hein Putter and Hans van Houwelingen from the Leiden University Medical Center. Because of the occasion, Hein Putter was asked to organize this meeting, and of course he focused on survival analysis. Speakers were Hein himself with "Dynamic frailty models based on compound birth-death processes", Steffen Unkel from the Georg August University Göttingen with "Shared frailty models and the relative frailty variance", Malka Gorfine (Tel Aviv University) with "Different aspects of frailty modelling" and Philip Hougaard (Lundbeck and University of Southern Denmark) with "Survival of Danish twins born 1870-2000 – preliminary report". It was a very interesting and well attended afternoon.

The scientific part of the meeting was followed by the ***General Assembly 2017***, where we said goodbye to our President, Jeanine Houwing-Duistermaat. Thank you Jeanine for all your efforts and enthusiasm! Jeanine will be replaced by Ernst Wit (Johann Bernoulli Institute for Mathematics and Computer Science, University of Groningen). The afternoon ended with drinks, bites and nice conversations.

Hein Putter, winner and organizer of the Spring Meeting.

Jeanine Houwing-Duistermaat, former President BMS-ANed.

Ernst Wit, President BMS-ANed.

Joanna in 't Hout

Eastern Meditteranean Region (EMR)

9th EMR-Italian Region Conference, Thessaloniki

The ***9th Eastern Mediterranean and Italian Region – International Biometric Society Conference*** took place in Thessaloniki, Greece 8–12 May 2017. Thessaloniki, being at the crossroads of different civilizations and religions, is a city that embodies the nature of EMR. This was the regular biannual meeting of EMR. This year it was organized jointly with the Italian Region. As always, the conference brought together researchers from around the world in this beautiful place. There were around 200 participants from 23 countries all over the world. The entire meeting was devoted to the memory of Prof. Marvin Zelen (Harvard University), a keen supported of EMR, who passed away in November 2014.

During the four days of the scientific program there were 110 talks and 25 posters. The meeting included several invited and contributed sessions. Continuing the tradition of EMR meetings, there was an Italian-Spanish session to support the network activities between the Eastern Mediterranean, Italian and Spanish Regions.

The social events started with a welcome party on the roof of the MET hotel with a view towards the entire city. The weather permitted everyone to stay until late, and the participants enjoyed the relaxing atmosphere. An excursion to ancient Vergina where the temple of Philippos, father of Alexander the Great, was found, took place Wednesday. Finally, a gala dinner with Latin music in a spectacular building with a view of the gulf Thursday night ended with most participants dancing.

As far as the scientific part of the meeting, Sharon-Lise Normand (Harvard University) was the winner of the ***Marvin Zelen Keynote Speaker Award***, which is supported by Frontier Science Foundation Hellas (FSFH).

Christos Thomadakis (University of Athens, Greece), Marta Bofill Roig (Univercity Polytechnica de Catalunya, Spain) and George Bartzis (Leiden University, the Netherlands) were the winners of the ***Lagakos Student Awards*** that have been established since 2011 from FSFH to honor the memory of Prof. Steve Lagakos.

IBS supported students from Italy and Spain to participate in the conference.

The next EMR conference is planned to be held in Israel in 2019.

George Bartzis (Leiden University) receiving his Lagakos Award from Prof. KyungMann Kim.

Christos Thomadakis (University of Athens) receiving his Lagakos Award from Prof. Ourania Dafni.

Marta Boffil (University Polytechnica de Catalunya) receiving her Lagakos Award from Prof. John Hinde.

Prof. Rich Gelber (during the opening session of the Symposium) talking about the work of Prof. Marvin Zelen.

Symposium Honoring Prof. Marvin Zelen

A satellite symposium to the EMR and Italian conference took place in the same place in Thessaloniki 7–8 May 2017. Frontier Science Foundation Hellas (FSFH), a non-profit organization, organized a symposium to honor Marvin Zelen, Co-founder of FSFH. The ***Symposium*** took place at Thessaloniki, Greece starting mid-day on Sunday, the 7th through Monday, the 8th of May, prior to the 9th ***EMR-IBS and Italian Region Conference*** (8–12 May 2017, Thessaloniki, Greece). Marvin was a pioneer in the field of Biostatistics, professor and exceptional member of the Harvard School of Public Health community, founder of FSTRF, but above all a mentor for scientists working in medical statistics and research. This ***Symposium*** celebrated his memory and unique contributions in science. Speakers for the Symposium were: Su-Chun Cheng, Ori Davidov, Laurence Freedman, Constantine Gatsonis, Richard Gelber, Lupe Gomez, Joan Hu, Ping Hu, Mette Kalager, KyungMann Kim, Nuala McGrath, Cyrus Mehta, Sharon-Lise Normand, Meredith Regan and David Schoenfeld.

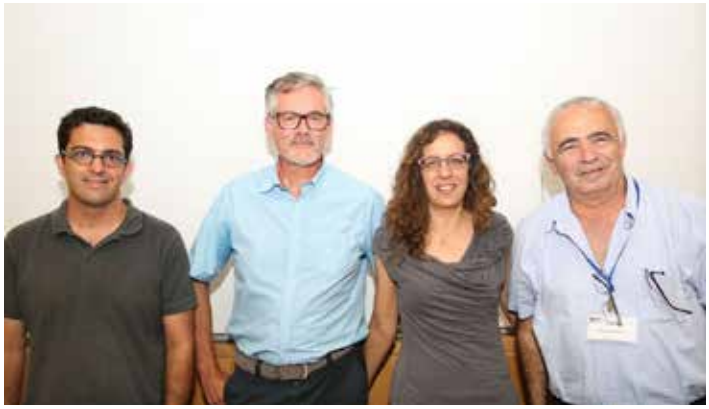
The meeting was full of memories of Zelen. Members of his family and his collaborators were also present, making his legend alive during the entire symposium.

Israel

A short course on ***Bayesian Methods in Clinical Research*** was held 9 – 13 July at Tel Aviv University's School of Public Health. It was one of the courses held in the ***Summer Institute of Advanced Epidemiology and Preventive Medicine,*** in collaboration with Johns Hopkins University Bloomberg School of Public Health. The speaker was Prof. Emmanuel Lesaffre (Catholic University of Leuven and Hasselt, Belgium). There were 25 attendees, which included statisticians, epidemiologists and physicians. The course was very interesting and included many good applications. Prof. Lesaffre explained complicated issues in a simple way, while having a fruitful discussion with the audience.

Speaker: Emmanuel Lesaffre (Catholic University of Leuven and Hasselt, Belgium).

Audience at the Bayesian Methods short course.



From left to right: Ori Capara (Teacher Assistant), Emmanuel Lesaffre (Speaker), Havi Murad (Organizer) and Daniel Cohen (Head of Public Health School, Tel Aviv University).

Dinçer GÖKSÜLÜK

Eastern North American Region (ENAR)

WebENAR

The most recent installment of the ***WebENAR*** series was given by Tyler VanderWeele of Harvard University on 15 September. The topic was Causal Mediation Analysis. The following installment will cover Multistate-state Models: Methods and Software, presented by Christopher Jackson of the University of Cambridge on 20 October. Registration instructions and additional information may be found here: http://www.enar.org/education/index.cfm.

2017 JSM – Baltimore, MD, USA

The *2017 JSM* was held at the Baltimore Convention Center in Baltimore, MD from 29 July – 3 August. The theme of the 2017 meeting was 'Statistics: It's Essential'. These sessions included invited presentations about safety evaluation, joint modelling of recurrent and terminal events, integrative analysis of genomics, reproducibility, mediation of behavioral health interventions, surrogate endpoints, causal inference for infectious disease outcomes, meta-analysis, methods for massive, multi-modal, and complex imaging data, econometrics and policy, precision medicine, statistical challenges and methods for electronic health records, microbiome analysis, functional data, spatial risk assessment and network analysis. This year's program also featured an ENAR-sponsored invited poster session on astrostatistics. ENAR also co-sponsored many contributed sessions, as well as special presentations, such as: introductory overview lectures (computer age statistical inference, network data, data science and quantile regression), the *ASA President's Invited Address* (delivered by Jo Craven McGinty from the *Wall Street Journal*), the *Deming Lecture* ('A Rake's Progress Revisited', delivered by Fritz Scheuren of NORC at the University of Chicago), the *ASA President's Address* ('Statistics: Essential Now More Than Ever (Or Why Uber Should Be in the Driver's Seat for Cars, Not for Data Analysis', delivered by ASA President Barry Nussbaum of the Environmental Protection Agency) and the *Fisher Lecture* ('The Importance of Statistics: Lessons from the Brain Sciences', delivered by Robert E. Kass of Carnegie Mellon University). ENAR received many proposals for invited and topic-contributed sessions and thanks everyone who put forth an idea. ENAR extends a huge thank you to Dionne Price from the Food and Drug Administration for serving on the Program Committee for the *2017 JSM*.

2018 ENAR Spring Meeting

The *2018 ENAR Spring Meeting* will take place in Atlanta, GA at the Hyatt Regency Atlanta on Peachtree Street from 25 – 28 March. There will be over 40 invited sessions on the program. Submissions to the student paper competition are due 15 October; all other contributed oral and poster presentation submissions are due 1 November. ENAR would like to thank Program Chair Veera Baladandayuthapani (veera@mdanderson.org) and Associate Chair Jeff Goldsmith (jeff.goldsmith@columbia.edu), the Education Advisory Committee and the Local Arrangements Committee for their hard work in planning the *ENAR Spring Meeting*. More details may be found at: https://www.enar.org/meetings/spring2018/index.cfm.

2018 JSM – Vancouver, British Columbia, Canada

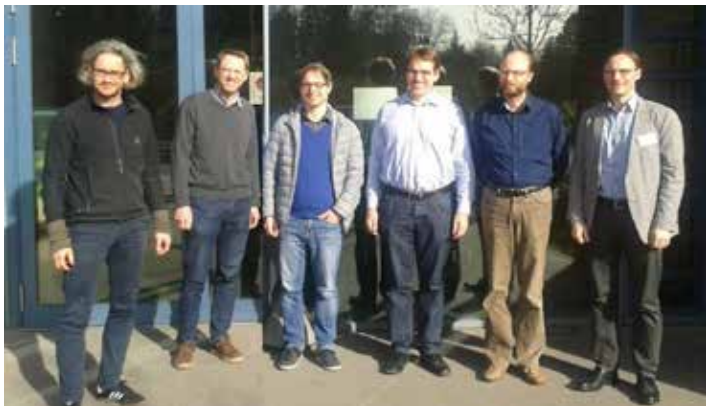
The *2018 Joint Statistical Meetings* will be held in Vancouver, British Columbia, Canada 28 July – 2 August, and ENAR is fortunate to have Brian Reich of NC State (Brian_Reich@ncsu.edu) be our representative to the Program Committee. ENAR members may contact Brian with any ideas or questions. The theme for the 2018 meeting is #LeadWithStatistics. The deadline for invited session proposals is 6 September. Session proposals must be submitted through the *JSM* online system, indicating session type and proposed partner society.

Alisa Stephens-Shields

German Region (DR)

From the Working Groups of the German Region

The Working Groups 'Statistical Methods in Bioinformatics' and 'Mathematical Models in Medicine' of the German Region held their annual 'Workshop on Computational Models in Biology and Medicine' from March 2–3, 2017 at the University of Veterinary Medicine Hannover. About 50 researchers attended the workshop this year. Keynote speakers were Vanessa Didelez (Leibniz Institute for Prevention Research and Epidemiology, Bremen), Korbinian Strimmer (Imperial College, London) and Arne Traulsen (Max Planck Institute for Evolutionary Biology, Plön). The presented talks and posters of the participants represent a variety of topics related to mathematical modeling and statistical bioinformatics. The workshop was organized by the speakers of the Working Groups (Klaus Jung, Hannover; Holger Fröhlich, Bonn; Markus Scholz, Leipzig and Ingmar Glauche, Dresden).



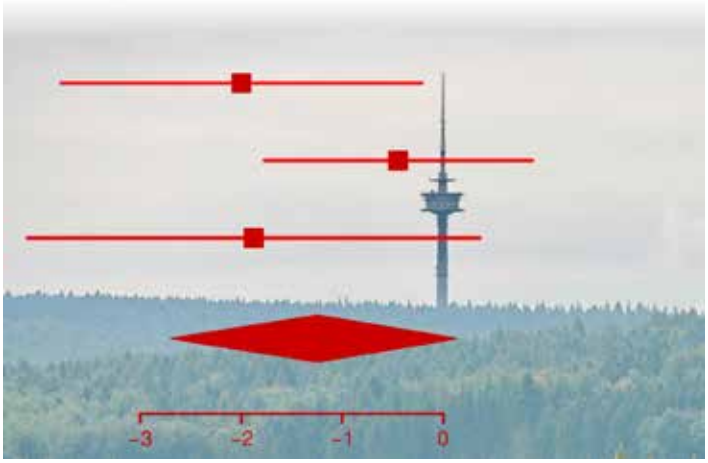
Keynotes and organizers of the Workshop on Computational Models in Biology and Medicine.

Summer School on Sample Size Estimation

The IBS-DR supported a summer school on sample size estimation that was held 5–7 July 2017 in Strobl on the beautiful St. Wolfgang Lake in the Salzkammergut, Austria, surrounded by the impressive mountain scenery. The workshop was led by Meinhard Kieser and Katrin Jensen from Heidelberg University (Germany) and Arne Bathke from Salzburg University (Austria). The over 30 participants learned about sample size estimation in classical settings, as well as testing non-inferiority, superiority and equivalence. Additionally, methods for more than two treatment arms and multiple endpoints, longitudinal and time-to-event data were discussed, as well as Bayesian and nonparametric approaches. Between the sessions at the excellent conference site, the perfect summer weather and inviting lake offered welcome breaks. Active networking and exchange of ideas also took place during the early morning jogs, the evening barbecue and the distillery tour. Several participants already promised to return in the coming year!

Participants of the Summer School on sample size estimation during the course.

IBS-DR Summer School 2017 'Meta Analysis'



A summer school on meta-analysis was held June 19–21 in Barsinghausen (near Hannover). The hotel, which at other times serves as a training venue for major football (including national) teams, welcomed everyone with a pleasant atmosphere. The panel of organizers included Ralf Bender (IQWiG, Cologne), Tim Friede (UMG, Goettingen), Guido Knapp (TU Dortmund), Christian Röver (UMG, Goettingen) and Simon Wandel (Novartis, Basel). Topics ranged from the gathering of evidence in systematic reviews, via simple meta-analysis methods to meta-regression, Bayesian methods and regulatory implications. There were 29 attendees from various backgrounds (industry, public agencies and universities) who followed the lectures and exercises, and in the evening flocked into the attached beer garden or took the chance to try out the local playing field for a little soccer match. The summer school's topic was met with great interest and might be followed up on in the near future.

Axel Benner

Japanese Region (JR)

The 2017 Japanese Joint Statistical Meeting

The Biometric Society of Japan (BSJ) was one of the six sponsoring organizations of the ***2017 Japanese Joint Statistical Meeting*** held on 3–6 September at Nanzan University in Nagoya, Japan. The BSJ organized an invited session as the ***Biometric Symposium***, which was entitled "P-values in medical and agricultural research: beyond the $p<0.05$ paradigm". Issues on p-value were discussed in epidemiology, agricultural research and genomics. The Society also organized an invited session, in which the two winners of the ***Young Biostatisticians Award*** conferred by the Society made a presentation on their research. One winner talked on methodology in diagnostic medicine and the other on the principal stratification approach in causal inference.

Satoshi Hattori

Singaporean Region (SING)

Workshop on Quantitative Methods for Drug Discovery and Development

A workshop on ***Quantitative Methods for Drug Discovery and Development*** was held in Singapore from June 19 to July 14, 2017. The workshop was sponsored by the Institute of Mathematical Sciences in Singapore, and there were about 50 academic and industry participants from Singapore, Canada, China, Germany, India, Japan, Luxemboug, Russia, Sweden, Switzerland, UK and USA. In addition, IBS Singapore Region members Jialiang Li and Bibhas Chakraborty gave talks on ***Nonparametric estimation and inference for polytomous discrimination index*** and ***Design and analysis of sequential multiple-assignment randomized trials***, respectively during the workshop.

A group photo of participants climbing Mount Faber in Singapore during one of the workshop outing trips.

Li Jialiang

Western North American Region (WNAR)

The ***2017 Annual Meeting*** of the WNAR/IMS was hosted by the University of New Mexico from June 25–28 with over 150 participants. The meeting began with two short courses: "Clinical Trials: How to create, organize and implement a clinical trial from a statistical perspective" presented by Tammy Massie from the National Institutes of Health and "Spatio-temporal dynamic statistical modeling in practice" presented by Mevin Hooten from Colorado State University, Trevor Hefley from Kansas State University and Perry Williams from Colorado State University. Javier Rojo from Oregon State University presented the ***WNAR Presidential Invited Address***.

The conference included eleven invited sessions sponsored by WNAR, two invited sessions sponsored by IMS, three student paper competition oral sessions, nine contributed paper sessions and a poster session. WNAR thanks Charlotte Gard (New Mexico State University) for her efforts as the Program Chair.

Figure 1a-b: Conference participants enjoying the WNAR mixer and poster session.

Figure 2a-b: Conference participants enjoying the reception after the Javier Rojo's Presidential Invited Address.

WNAR thanks the invited session organizers, invited session chairs and contributed session chairs. WNAR also thanks the faculty and volunteers from the University of New Mexico. WNAR gives a particular thank you to the Local Organizer, Cristina Murray-Krezan.

2018 WNAR/IMS Meeting

The ***2018 WNAR/IMS Meeting*** will be in Edmonton, Canada from 24–27 June at the University of Alberta. The campus is located on the southern bank of the North Saskatchewan River. As one of the largest cities in Canada, Edmonton is a cultural center, with many arts and culture events anchored in the downtown Arts District, accessible from campus by the city light rail system. Both the ***Edmonton Jazz Festival*** and ***Freewill Shakespeare Festival*** are scheduled to occur in the city during the WNAR conference dates. Most of the city has accessible bike and walking trail connections. In addition, Edmonton is a four hour drive from Banff National Park, Canada's oldest National Park and Alberta's most visited tourist destination. Visitors to Banff in the summer can enjoy hiking, camping, canoeing, cycling, fishing, golfing, kayaking, skateboarding, swimming, walking trails and relaxing at the hot springs. The local organizers are Bei Jiang and Linglong Kong. Details about the meeting will be posted on the WNAR web page www.wnar.org as they become available.

Megan Othus

Announcements

IBS Journal Club

The August presentation of the **IBS Journal Club** was held on 10th August and included a presentation by Anais Rouanet on her paper "Joint Latent Class Model for Longitudinal Data and Interval-Censored Semi-Competing Events: Application to Dementia" (Biometrics 72, 1123–1135, December 2016) and a discussion led by Freedom Gumedze. The Journal Club and its preparation were well organized, with prior registration of participants, by the International Biometric Office (IBO), who gave the access codes for phone and online login to potential participants. The webinar was well attended with about 30 participants present. The webinar has an appropriate length (a total of one hour) with a 20-30 minute presentation, followed by a discussion and questions from the audience.

Following the Journal Club, we asked Anais and Freedom about the experience of presenting and discussing the paper. Both reported that this was the first journal club meeting they had attended and that they enjoyed the experience. The formality of having a presenter and a discussant was appreciated. Dr. Rouanet said, ***It is a great experience for authors to valorize their work and for the audience to have a more accessible presentation and opportunity to discuss particular points.*** Dr. Gumedze commented, ***Overall I think this is an important activity which is hugely beneficial to both post-graduate students and established researchers, especially in developing countries. It is also a good initiative to support the IBS flagship journal Biometrics.***

The discussion within the Journal Club was diverse. The presenter responded to the discussion points raised by the discussant and to two or more questions from the participants. In the end time ran out for further questions and discussion, but the opportunity for audience participation in asking questions was appreciated. Following the Journal Club there has been a debate about whether the presenter, discussant and the audience should have more (or less) access to the presentations before they are presented at the Journal Club. While this may encourage more thorough questions and answers, it may make the discussion less accessible to participants without specialist knowledge on the topic. It would be good to have the thoughts and comments from IBS members who attend the Journal Club in the future.

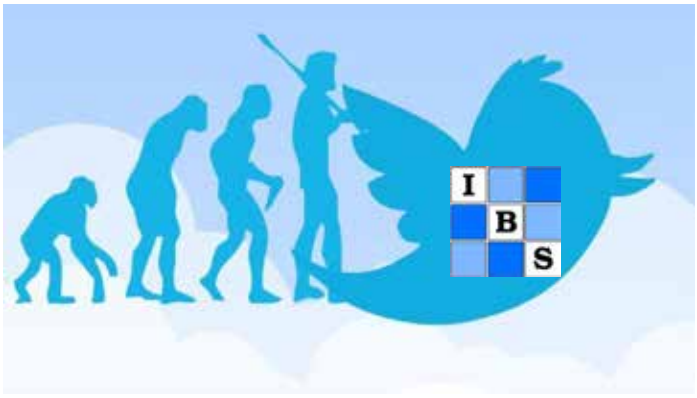
For more information on future Journal Club dates for 2017, please visit https://www.biometricsociety.org/education/journal-club/:

- **12 October 15:00 GMT**
- **7 December 15:00 GMT**

We would welcome suggestions for future Journal Club presentations based on papers in ***Biometrics*** or ***JABES***.

IBS Education Committee

The Committee on Communications of the IBS invites you to...



Follow us on Twitter!

Why? To get the latest news about IBS activities as it's happening!

Join now! It's easy. Find out how.

Already on Twitter? Our username, or handle, is @IBSstats.

How to join us on Twitter:

1. Sign up for a Twitter account.
2. Go to the IBS Twitter page.
3. Click on the Follow button on the right-hand side of the page.

4. Sign in, and once again click on the Follow button.
5. You're done! Of course, to receive notifications from us on your smart phone, you will need to download the Twitter app.

IBS is on LinkedIn!

Join Our Group, and Get Connected to Colleagues Across the Globe!

Did you know that IBS has a LinkedIn Group for biometrics industry professionals? Network with your colleagues instantaneously! Post discussions to the Group, and get comments/feedback from group members on their perspectives or experiences. A great benefit of this Group is that it's a very easy and free way to communicate with your colleagues who live all over world. Being connected to the IBS Group will allow you to see other connection possibilities, as well and broaden your professional network. The possibilities are endless. Join our Group today by visiting www.linkedin.com and search under Groups for "International Biometric Society".

MEETINGS

2017

4 – 5 October
German Region Two-day Course on Baysesian Clinical Trials
Ulm University
Senatssaal, Helmholtzstrasse 16
http://www.biometrische-gesellschaft.de/arbeitsgruppen/bayes-methodik/workshops/2017-ulm.html

17 – 20 October
Argentinian Region XXII Reunion Cientifica
Facultad de Ciencias Económicas y Estadística, Universidad Nacional de Rosario
Argentina
http://www.cie2017.s-a-e.org.ar/congreso.php?modulo=1

24 – 27 October
The Jamaica Statistics Symposium and Pre-conference Workshop Series 2017
"Statistics for Success: Ethics, Data Quality and Security"
Kingston, Jamaica
jssbiennial.rc@gmail.com

11 – 15 November
VI Iberoamerican Meeting of the RCAC
Central Campus of the University of the Armed Forces
Sangolquí, Ecuador
http://www.biometriaecuador2017.com/

26 – 30 November
Australasian Regional Conference
Kingscliff, NSW, Australia
http://www.biometricsociety.org.au/

7 – 8 December
Workshop "Bayesian methods for hierarchical distance sampling models"
Hannover
http://www.biometrische-gesellschaft.de/arbeitsgruppen/bayes-methodik/workshops/2017-hannover.html

2018

25 – 28 March
ENAR Spring Meeting
Atlanta, GA, USA
http://www.enar.org/meetings/future.cfm

24 – 28 June
WNAR/IMS Meeting
Edmonton, Canada
www.wnar.org

8 – 13 July
XXIXth International Biometric Conference
Barcelona, Spain
http://www.biometricsociety.org/meetings-events/ibcs/

July 28 – August 2
Joint Statistical Modeling
Vancouver, BC, Canada
http://www.imstat.org/meetings/2018.htm

26 – 30 August
Annual Conference of ISCB and Biennial ASC
Melbourne, Australia
www.iscbasc2018.com

2019

24 – 27 March
ENAR Spring Meeting
Philadelphia, PA, USA
http://www.enar.org/meetings/future.cfm