

B-Stat News

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of the
Belgian Statistical Society
Belgische Vereniging voor Statistiek
Société Belge de Statistique

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Editeurs responsables/Verantwoordelijke uitgevers :
Sophie Vanbelle, Department Methodology and Statistics, Maastricht University
P. Debeyelein, 1 6229 Maastricht, The Netherlands
Herbert Thijs, Center for Statistics, Hasselt University
Agoralaan - building D, 3590 Diepenbeek

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Website of the Society

www.sbs-bvs.be

B-Stat News editor

Sophie Vanbelle : sophie.vanbelle@maastrichtuniversity.nl

Herbert Thijs: herbert.thijs@uhasselt.be

Webmaster

Laurence Seidel : laurence.seidel@ulg.ac.be

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19TH ANNUAL MEETING OF THE BELGIAN STATISTICAL SOCIETY

Hasselt (Belgium), 12-14 October 2011

Call for oral communications and posters

All participants are invited to present their work either as an oral presentation or as a poster. We strive for diversity and excellence in the programme. The number of slots for oral and poster communication is limited. Abstracts should be submitted via e-mail *before July 16, 2011* following the guidelines available on the meeting's website. All abstracts should be sent to: viviane.mebis@uhasselt.be

Venue of the Conference

The conference will be held in

Holiday Inn Hotel Hasselt

Kattegatstraat 1

3500 Hasselt

Accommodation will be in Holiday Inn Hotel Hasselt or in the nearby Holiday Inn Express Hasselt (Thonissenlaan 37, 3500 Hasselt)

Registration

To enjoy early registration reduction, please register *before August 31, 2011* through the website: <http://www.uhasselt.be/bss2011>

Registration Fees

	2day Conference	3day Conference
Student & BSS Member	€ 160	€ 160
Student & Non Member	€ 200	€ 200
BSS Member	€ 180	€ 220
Non Member	€ 220	€ 260

After August 31, all prices are increased by 30 euros. Prices include lodging and meals, including a conference dinner on Thursday night. Non students will stay in the main Holiday Inn Hotel. Students will share rooms in Holiday Inn Express. Please indicate your roommate on the form. In case you prefer a room by yourself, a surcharge of 30 euros will be applied. Students should send a scanned proof to: viviane.mebis@uhasselt.be. Registration fees should be paid to the account of:

SBS-BVS
Center for statistics, Universiteit Hasselt
Universitaire Campus
B-3590 Diepenbeek (Belgium)
Account number: 235-0157029-95
Mention: BSS2011 + "your name"

Scientific Committee

Noël Veraverbeke (Chair, UHasselt), Thomas Bruss (ULB), Gerda Claeskens (K.U.Leuven), Luc Duchâteau (UGent), Cédric Heuchenne (ULg), Paul Janssen (UHasselt), Tetyana Kadankova (VUB) and Catherine Legrand (UCL).

Organising committee

Noël Veraverbeke (Chair, UHasselt), Marc Aerts (UHasselt), Roel Braekers (UHasselt), Paul Janssen (UHasselt), Christel Faes (UHasselt), Niel Hens (UHasselt), Cédric Heuchenne (ULg), Catherine Legrand (UCL), Viviane Mebis and Hilde Zurings (Secretaries UHasselt).

More information

<http://www.uhasselt.be/bss2011>

WORKSHOP ECONOMETRIC AND STATISTICAL MODELLING OF MULTIVARIATE TIME SERIES

Louvain-La-Neuve (Belgium), 25-27 May 2011

This interdisciplinary workshop on multivariate time series will address substantial questions of a common interest in econometrics and statistics. The particular topics that are covered by the meeting are: multivariate volatility models, high frequency data, extreme value modeling, dimension reduction and factor models, time-varying parameter models and structural changes, forecasting.

Venue

Auditoire Montesquieu 03
Place Montesquieu, 32
1348 - Louvain-la-Neuve

Registration

Registration for this event is open. Please note that the number of participants is restricted. We therefore recommend to register as soon as possible, since the first completed registrations will have priority. From April 15, registration fee is 180 euros (120 euros for PhD students). It includes all coffee breaks, lunch on Thursday and Friday and a cocktail on Wednesday evening. You are also warmly invited to attend the conference dinner on Thursday evening at the additional cost of 60 euros.

Scientific committee

Luc Bauwens, Christian Hafner, Rainer von Sachs, Johan Segers, Sébastien Van Bellegem, David Veredas

More information

<http://www.uclouvain.be/en-332033.html>

WORKSHOP ON SYMBOLIC DATA ANALYSIS

Namur (Belgium), 7-9 June 2011

About one and a half year after the last Workshop on Symbolic Data Analysis (SDA), held in Wienerwaldhof, time has come to gather again people from different teams working in this field, to review recent developments, from both a theoretical and methodological point of view, to know about practical applications and new software available, as well as to discuss lines for future research. The program, mixing oral presentations and open discussions, intends to foster interaction so as to open the way to future cooperation between participants. All researchers and teams who develop research or recently became interested in this domain are invited. Workshop language is English.

Venue and dates

The workshop will start on June 7 at 14h and will finish on June 9 at 17h. It will be held at Institut d'Informatique, 4th floor, 21 rue Grandgagnage, Namur (<http://www.fundp.ac.be/en/access>)

Registration fees

The participation fee (including meals, coffee breaks and book of abstracts) to be paid is 150 Euros (before May 15th) and 175 Euros (after May 15th).

Scientific organizers

Paula Brito, University of Porto (Portugal)
Monique Noirhomme-Fraiture, University of Namur (Belgium)

More information

Web site : <http://www.info.fundp.ac.be/SDA11/>

WORKSHOP ON TIME SERIES ANALYSIS AND COMPUTATIONAL STATISTICS

Bruxelles (Belgium), 10 June 2011

This conference is organized on the occasion of the retirement of Guy Mélard, Professor of Statistics at the ULB. It is organized to honor his important achievements, both in research and in teaching. For forty years, Guy Mélard has much contributed in making of Brussels a visible centre of excellence in the field of time series analysis. His activities, however, have extended much beyond that field: the journals he has published in, which range from Linear Algebra and its Applications and the Annals of Statistics to Computational Statistics and Data Analysis and the IEEE Transactions on Signal Processing, clearly show the important diversity of his research interests. The program is structured around the two major research topics of Guy Mélard: computational statistics and the analysis of time series models. The conference will bring together speakers from three continents, which count among his main co-authors and collaborators.

Invited speakers

- [Jan G. DE GOOIJER](#) (Universiteit van Amsterdam)
- [Christian FRANCO](#) (Université Lille 3)
- [Marc HALLIN](#) (ECARES, Université libre de Bruxelles and ORFE, University of Princeton)
- [André KLEIN](#) (Universiteit van Amsterdam)
- [Jerzy NIEMCZYK](#) (European Central Bank)
- [Roch ROY](#) (Université de Montréal)

Conference venue

The conference will take place on the [Solbosch](#) campus of the [Université libre de Bruxelles](#). The presentations will be held in the [ECARES](#) seminar room (R.42.2.113), which is located in the new building (building R42) of the [Solvay Brussels School of Economics and Management](#).

Address of the Building R42:
42, avenue Roosevelt
1050 Bruxelles

Registration

Registration is free but compulsory. The lunch will take place in the university cafeteria. Lunch tickets (soup, main dish, dessert, soft drink and coffee) can be bought at the welcome of the meeting. The price is 12,50 €. You do not need to pay at registration; yet, to help us with the organisation, please indicate in the form below whether you plan to have lunch with us or not.

The conference dinner will take place on June 10, at 8pm. If you wish to participate, please tell us through the registration form and send 90 € (per person) by bank transfer.

Organizers

Organization committee : Abdelkamel ALJ (ULB), Catherine DEHON (ULB), Christophe LEY (ULB), Davy PAINDAVEINE (ULB), Johan SEGERS (UCL), Catherine VERMANDELE (ULB)

Scientific committee : Catherine DEHON (ULB), Christophe LEY (ULB), Davy PAINDAVEINE (ULB), Johan SEGERS (UCL), Catherine VERMANDELE (ULB)

More information

<http://gm2011.ulb.ac.be>

2011 NON-CLINICAL BIOSTATISTICS CONFERENCE

Boston (United-States), 18-20 October 2011

We are pleased to announce the second U.S. conference dedicated entirely to Non-Clinical Biostatistics. It is organized jointly by regulatory and pharmaceutical/biotech statisticians in collaboration with the *Department of Biostatistics* at the *Harvard School of Public Health*. The conference will take place from October 18 - 20, 2011, at the Harvard Medical School's Joseph B. Martin Conference Center in Boston.

Members of the non-clinical/pre-clinical statistics community are invited to submit proposals for presentations and posters discussing significant scientific and regulatory issues. Attendees will have ample opportunity to network, share experiences and discuss current scientific issues with leaders in the field.

Registration and a call for abstracts will open on January 3, 2011 on this site (accessible as www.ncb2011.org). Questions, suggestions and comments can be directed to info@ncb2011.org.

Preliminary program

Keynote speaker: *Bob O'Neill (FDA)*

- Half-day short course
- Invited and contributed presentations and posters covering:
- Discovery/Early Development/-omics
- Pharmacology/Safety/Toxicology/pK
- CM&C/Manufacturing
- Welcome reception and conference dinner
- Roundtable discussions
- Vendor presentations and courses

FORTHCOMING STATISTICAL EVENTS

May 10 2011 –Basel, Switzerland, BBS spring conference: Comparative quantitative assessments: benefit-risk assessments and comparative effectiveness research,

More information: fred.sorenson@quintiles.com

May 11-12 2011 –München, Germany, 4th workshop on vine copula distributions and applications,

More information: <http://www-m4.ma.tum.de/lect-conf/vinesworkshop/>

May 18-27 2011 –Bruxelles-Hasselt, Belgium, The Princess Lilian visiting professorship for Pr. A. Tsiatis (North Carolina State University),

More information: <http://www.ibiostat.be/Tsiatis.asp>

May 19-20 2011 –Hasselt, Belgium, International symposium on recent advances in Statistics and Probability in honor of prof. Dr. Noël Veraverbeke,

More information: <http://www.uhasselt.be/ISRASP>

May 23-27 2011 –Gammarth, Tunisia, Journées de Statistique 2011,

More information: <http://jds2011.tn.refer.org/>

May 25-27 2011 –Louvain-La-Neuve, Belgium, Interdisciplinary workshop on Econometric and statistical modelling of multivariate time series,

More information: <http://www.uclouvain.be/en-332033.html>

June 7-9 2011 –Namur, Belgium, Workshop in symbolic data analysis,

More information: <http://www.info.fundp.ac.be/SDA11/>

June 10 2011 –Bruxelles (ULB), Belgium, Workshop: Time series analysis and computational statistics, in honor of Pr. Guy Melard
More information: <http://gm2011.ulb.ac.be>

June 13-16 2011 –Athens, Greece, 5th Annual international conference on mathematics and statistics,
More information: www.atiner.gr/mathematics.htm

August 8-10 2011 –Trier, Germany, ECAS course: Small area in statistics; theory and practice,
More information: <http://www.uni-trier.de/index.php?id=33500>

September 5-9 2011 –Lisbon, Portugal, 17th European young statisticians meeting,
More information: <http://www.fct.unl.pt/17eyism>

October 12-14 2011 –Hasselt, Belgium, 19th annual meeting of the Belgian Statistical Society.
More information: <http://www.uhasselt.be/bss2011>

October 18 2011 –Boston, United States, 2011 Non-clinical biostatistics conference.
More information: www.ncb2011.org

October 20-21 2011 –Rotterdam, The Netherlands, Short course: Missing data in Longitudinal studies: strategies fro Bayesian modeling, sensitivity analysis, and causal inference, Pr. Mike Daniels, University of Florida
More information: d.wijnen@erasmusmc.nl

RECENT PHD THESIS

Université libre de Bruxelles (ULB)

Christophe Ley. *Univariate and multivariate symmetry: statistical inference and distributional aspects (2010)* – Promotor. Pr. D. Paindaveine

This dissertation analyzes several statistical and probabilistic aspects of univariate and multivariate symmetry and asymmetry, and is divided into three parts.

The first part solves two conjectures associated with multivariate skew-symmetric distributions. Since the introduction in Azzalini (1985) of the most famous representative of that class of distributions, namely the scalar skew-normal distribution, it is well known that, in the vicinity of symmetry, (i) the Fisher information matrix is singular and (ii) the profile log-likelihood function for the asymmetry parameter always admits a stationary point, whatever the sample considered. Since then, researchers have tried to determine the subclasses of skew-symmetric distributions that suffer from each of these peculiarities, which has led to the aforementioned conjectures. The first part of this dissertation completely solves these two problems by characterizing the subclasses where each problem occurs, providing in this way some new insight into the construction and nature of skew-symmetric distributions.

The second part of the dissertation aims to apply known general skewing mechanisms and to propose new ones. I have made use of the univariate mechanism from Ferreira and Steel (2006) in order to construct optimal (in the Le Cam sense) tests for univariate symmetry that enjoy high flexibility. Actually, since this mechanism allows to transform a given symmetric distribution into any other distribution, the resulting alternatives to the null hypothesis of symmetry can take any possible form. This univariate mechanism, besides this surjectivity property, enjoys further advantages, but its construction does not allow for a satisfactory extension to higher dimensions. That is why I then propose an alternative general skewing mechanism which shares the attractive properties of its competitor from Ferreira and Steel (2006) in the univariate case but which, moreover, can be generalized in a highly satisfactory way to any dimension. I have established the surjectivity property in dimensions $k > 1$ and studied the main characteristics of this new skewing mechanism, which now allows to compare, thanks to its surjectivity, all existing skewing methods in a

common framework, and this for any dimension.

Finally, the third and last part of this dissertation palliates the need of good tests for multivariate central symmetry by extending the celebrated McWilliams (1990) runs test for univariate symmetry to higher dimensions. This new test is based on both statistical depth functions and on an original concept of simplicial runs, resulting in depth-based runs tests for central symmetry. I have derived the limiting null distribution of the test statistics, which establishes their asymptotic distribution-freeness under the null, and have studied their finite-sample properties through Monte Carlo experiments.

References

Azzalini, A. (1985) A class of distributions which includes the normal ones, *Scandinavian Journal of Statistics* 12, 171–178.

Ferreira, J.T.A.S. and Steel, M.F.J. (2006) A constructive representation of univariate skewed distributions, *Journal of the American Statistical Association* 101, 823–829.

RECENT PHD THESIS

Hasselt University

Nele Goeyvaerts. *Statistical and Mathematical Models to Estimate the Transmission of Airborne Infections from Current Status Data (2011)* – Promotor. Pr. Niel Hens, Copromotors. Pr. Marc Aerts, Pr. Philippe Beutels

We explored diverse modelling methods for current status data and social contact data to enhance our understanding of the transmission of endemic or actively immunized infectious diseases which spread from person to person. We thoroughly studied the Belgian contact survey, collected as part of the POLYMOD project. The data mining analyses revealed that there are robust associations between general contact intimacy indicators, such as contacts taking place at home, lasting at least four hours, occurring on a daily basis, and involving skin-to-skin touching. The total number of reported contacts in the survey increased significantly with increasing household size and class size for children, and for adults who were employed or in further education, whereas it decreased significantly for children and teenagers during a school holiday period.

We proposed a semiparametric, bivariate smoothing approach to estimate contact rates from social contact survey data, and found this method to outperform Wallinga *et al.* (2006)'s low dimensional, fully parametric maximum likelihood approach. Furthermore, the bivariate smoothing method revealed a common pattern in the contact surfaces for all countries in the POLYMOD project: individuals mostly mix assortatively i.e. with people of similar age, and non-assortatively with children or parents. Further, we estimated age-specific transmission rates for varicella zoster virus in Belgium by augmenting the serological data with the estimated contact rates, hereby extending the work of Wallinga *et al.* (2006). An improvement of fit to the seroprevalence was obtained by modeling transmission as the product of two age-specific variables: the age-specific contact rate and an age-specific proportionality factor $q(a,a')$. Despite the fact that the social contact data approach tackles the main disadvantages of the traditional Anderson and May (1991) method, it still involves two dimensions of uncertainty: the choice of the type of contact underlying actual transmission of disease, and the choice of a parametric model relating the contact rates to the transmission rates. To overcome this problem of model selection uncertainty, we turned to multimodel inference and computed a model averaged estimate of the basic reproduction number R_0 .

We conducted a compartmental model structure analysis to estimate basic immunological processes for parvovirus B19 (PVB19), such as waning immunity, natural boosting of immunity and secondary infections, and to assess the impact on the inferred maternal risk. The social contact data approach revealed evidence towards long term processes of waning immunity for PVB19, however, it was difficult to discern from the current status data whether individuals with low immunity remain protected and can be boosted, or become susceptible again and potentially get reinfected. Our results showed that for four of the five European countries studied, model selection criteria favor the scenarios allowing for waning immunity at an age-specific rate over the assumption of lifelong immunity, assuming that the transmission rates are directly proportional to the contact rates. Different views on the evolution of the immune response to PVB19 infection led to altered estimates of the age-specific force of infection and R_0 . The scenarios which allowed for multiple infections during one lifetime predicted a higher frequency of PVB19 infection in pregnant women and of associated fetal deaths.

Finally, we reviewed the work of Gay (2000) and Altmann and Altmann (2000) on the estimation of trivalent vaccination coverage from trivariate serological data. While the exact, algebraic method of Altmann and Altmann (2000) was found less interesting from a statistical point of view, we elaborated on Gay (2000)'s maximum likelihood approach by allowing for an association between the probabilities of natural exposure to each of the three diseases for a non-vaccinated individual. To this purpose, the Bahadur model for trivariate binary data was used, which produced a decrease in the estimated measles-mumps-rubella vaccination coverage and an increase in the corresponding estimated variability, when applied to serological data for Belgium and Ireland.

References

Wallinga, J., Teunis, P. and Kretzschmar, M. (2006) Using data on social contacts to estimate age-specific transmission parameters for respiratory-spread infectious agents. *American Journal of Epidemiology*, **164**, 936-944.

Anderson, R. M. and May, R. M. (1991) *Infectious Diseases of Humans: Dynamics and Control*. Oxford: Oxford University Press.

Gay, N. (2000) A method for estimating coverage of a multivalent vaccine from antibody prevalence data: application to MMR vaccine in 3 European countries. Unpublished manuscript.

Altmann, D. and Altmann, K. (2000) Estimating vaccine coverage by using computer algebra. *IMA Journal of Mathematics Applied in Medicine and Biology*, **17**, 137-146.

JOB MARKET

There is an extensive list with new job offers which would be time and space consuming to publish here. Please note that the complete list with further details is shown at our website:

<http://www.sbs-bvs.be/>

EDITORIAL NOTE

We would like to publish in this Newsletter any statistical matter such as :

- information about universities, institutes (1 to 3 pages);
- lists of recent publications and technical reports;
- abstracts of recent PhD theses;
- news of members;
- forthcoming statistical events and announcements;
- short papers about teaching methods in statistics, statistics in the industry, official statistics, etc.

Suggestions are welcome: please, contact us.

Suitable information for the next issue, prepared as **(LA)TEX or WORD FILES**, should reach the editors of the Newsletter **BEFORE August 31, 2011**, preferable by e-mail to:

sophie.vanbelle@maastrichtuniversity.nl or herbert.thijs@uhasselt.be

Any change of job, address, phone number, ... ?

Please notify the Secretary of the Society:

Gentiane Haesbroeck:
Université de Liège
Institut de mathématique
Sart Tilman B37
B-4000 Liège
g.haesbroeck@ulg.ac.be