

UPCOMING CONFERENCES AND MEETINGS

August 3-7, 2008, Joint Statistical Meetings, Denver, Colorado, USA. For detailed information, contact jsm@amstat.org or

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THE CANADIAN JOURNAL OF STATISTICS

CJS: Coming Attractions

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While remaining international in scope, the June 2006 number of *The Canadian Journal of Statistics/La revue canadienne de statistique* illustrates well the breadth and novelty of statistical research in Canada. The opening paper, by Louis-Paul Rivest (U. Laval) and Ted Chang (U. Virginia), is 'Regression and correlation for 3×3 rotation matrices'. This work investigates a regression model for orthogonal matrices, focussing on the special case of 3×3 rotation matrices. The methodology has applications in kinematics, and is illustrated with examples dealing with postural variations of subjects performing a drilling task, and with the calibration of a camera system for motion analysis using a magnetic tracking device.

In 'Survival analysis based on the proportional hazards model and survey data', Christian Boudreau and Jerald Lawless (both U. Waterloo) propose methods, based on the stratified Cox proportional hazards model, that account for the complex survey designs often used to collect data in large scale longitudinal surveys. The application of the techniques is illustrated by an analysis of jobless spells in Statistics Canada's Survey of Labour and Income Dynamics.

Edit Gombay (U. Alberta) and Abdulkadir Hussein (U. Windsor), in 'A class of sequential tests for two-sample composite hypotheses', propose a class of statistics based on Rao's scores, for the sequential testing of composite hypotheses concerning the comparison of two treatments. Comparisons with nonsequential and group sequential tests are made through Monte Carlo simulations, and through a case study of a two-armed comparative clinical trial in patients with adult leukemia.



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Don Mcleish and Cynthia Struthers (both U. Waterloo) consider the problem of estimating a regression parameter when some data on a subvector of the covariate vector are missing at random. In 'Estimation of regression parameters in missing data problems', they compare several estimators with the profile estimator with respect to bias and standard deviation, considering both discrete and continuous responses and covariates.

Sanjoy Sinha (Carleton U.) notes that the method of quasi-likelihood, commonly used to fit generalized linear models to longitudinal data, can be highly influenced by the presence of potential outliers in the data. In 'Robust inference in generalized linear models for longitudinal data', he develops a robust quasi-likelihood method to address this problem. The practical advantages of the added robustness are illustrated in a comparative analysis of epilepsy data with some highly influential outliers.

Xiaogang Wang (York U.), in 'Approximating Bayesian inference by weighted likelihood', proposes to use weighted likelihood

to approximate Bayesian inference when no external or prior information is available. The estimate is derived by minimizing the empirical Bayes risk under relative entropy loss, and is illustrated on a data set arising in an example of educational testing.

A new method for constructing confidence intervals is described by Borek Puza and Terence O'Neil (both Australian National U.) in 'Interval estimation via tail functions'. The idea is to specify the tail cutoff areas in terms of a function of the target parameter rather than as constants. This function can be engineered so as to provide shorter confidence intervals when prior information is available. It can also be used to improve the coverage properties of approximate confidence intervals.

In 'A Bayesian signal detection procedure for scale space random fields', M. Farid Rohani, Khalil Shafie (both Shahid Beheshti U., Tehran) and Siamak Noorbaloohchi (U. Minnesota) consider the problem of searching for activation in brain images obtained from functional magnetic resonance imaging (fMRI), and the corresponding signal detection problem. A Bayesian procedure is developed to detect signals existing within noisy images when the image is modelled as a scale space random field. The method is applied to fMRI data collected in an experiment conducted by the Montreal Neurological Institute.

Marlos Viana (U. Illinois at Chicago) and Hak-myung Lee (Abbott Laboratories, Parsippany, N.J.) study relationships induced by the concomitants of order statistics, i.e., the ordered observations of one of a pair of samples, with the ordering induced by the natural ordering in the other sample. In 'Correlation analysis of ordered

symmetrically dependent observations and their concomitants of order statistics', these results are applied to a problem which arises in vision research.

Finally, in 'Pseudo-likelihood estimation in ARCH models', Kanchan Mukherjee (U. Liverpool) provides an asymptotic theory for a class of pseudo-likelihood estimators in the autoregressive conditional

heteroscedastic model. The method is in particular applicable to heavy-tailed error distributions, with no third or higher order moments.

CONSULTANT'S FORUM

How and How Well Do We Train Future Consultants?

*Jeanette O'Hara Hines
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At the SSC meetings last June in Saskatoon a session entitled 'How and how well do we train future consultants?' generated a lot of interest. This article was requested to summarize the material presented by the panel and will hopefully stimulate further dialogue about the training of our future consultants.

The session was organized by Jeanette O'Hara Hines, University of Waterloo and chaired by Gordon Hines, University of Guelph. The focus of the various talks ranged from the intended objective and structure of a statistical consultation with a client, through consulting courses currently being offered, to an assessment of one such course, and then to the requirements of employers (in the pharmaceutical industry). Comments by audience members were equally wide ranging. The invited speakers were David Bellhouse, Department of Statistics and Actuarial Science, University of Western Ontario; John Petkau, Department of Statistics, University of British Columbia; Jeanette O'Hara Hines, Department of Statistics and Actuarial Science, University of Waterloo; Heather Thiessen Philbrook, Kidney Clinical Research Unit, London Health Science Centre; and Jamie Myles, Pfizer. The first three speakers have been involved in statistical consulting both internally and externally to the university. As well, they have all conducted courses on statistical consulting for graduate students. Heather graduated in 2004 with a Master's in Biostatistics from the University of Waterloo, and Jamie has had many years of experience as a statistical consultant in the pharmaceutical industry.

David Bellhouse has had experience in designing a statistical consulting course



Jeanette O'Hara Hines

for the purpose of training graduate students at Western. He indicated that a major objective of the consulting unit in his department was to encourage joint research between the statisticians and other researchers. In his presentation, David discussed the various steps in a consulting process using an informative flow chart; this flow chart, reproduced below, is generic, to guide a wide variety of consultants.

This flow chart is a valuable tool for any statistical consulting course since it allows the instructor to outline and expand on the various steps in the consulting process. In particular, it demonstrates to budding consultants that the consulting process is definitely not linear. The flow chart has two places of possible iteration, the first, labeled 1, between 'Planning' and 'Entry' and the second, labeled 2, between 'Evaluation' and 'Planning'. These indicated iterations are there to remind consultants that any plan of design and analysis is, or should be, open to changes or adjustments. These changes or adjustments can result because of changes or

limitations in the research plan or as the consultant gets a clearer understanding of the research project. David indicated that the first step titled 'Scouting' was often forgotten. This step helps statistical researchers develop contacts for possible future joint research.

Unfortunately, due to financial constraints, the consulting unit has been disbanded at Western, and the consulting course has been dropped.

The pair of compulsory consulting courses in a two-semester sequence run by John Petkau and his colleagues at the University of British Columbia could be used as a model for other statistics departments interested in developing or improving a consulting program for training graduate students.

The first course discusses the basic skills of statistical consulting, with oral and written communication with non-statisticians being an important focus. Regression and experimental design courses are prerequisites. The course takes on slightly different forms depending upon which faculty member is offering the course. John uses eight to ten statistical consulting case studies to provide the students with training in interviewing clients, translating subject-area problems into statistical terms, isolating key statistical aspects of problems and identifying appropriate statistical methodology for problems. For each case study, the students are given a page of description in the client's language outlining the scientific problem and the issues to be addressed, perhaps along with a partial data listing. The students then submit three "key questions" and interview the "client" (role-played