

# Statfax

## Spring Meeting Presentations

Please join us for the Spring Meeting on Thursday, March 5 at the Radisson Hotel Northbrook (2875 N. Milwaukee Ave., Northbrook, IL 60062). Lunch is at 11:30 with presentations starting at 12:30. There will be three speaker sessions. The title, speaker, abstract, and biography for the three speakers are:

**Title:** *Semi-parametric Joint Modeling of Longitudinal and Survival Data.*

**Speaker:** Liang Li, Ph.D., Department of Quantitative Health Sciences, Cleveland Clinic

**Abstract:** In many longitudinal clinical studies, the level and progression rate of repeatedly measured biomarkers on each subject quantify the severity of the disease and that subject's susceptibility to progression of the disease. It is of scientific and clinical interest to relate such quantities to a later time-to-event clinical endpoint such as patient survival. This is usually done with a shared parameter model. In such models, the longitudinal biomarker data and the survival outcome of each subject are assumed to be conditionally independent given subject-level severity or susceptibility (also called frailty in statistical terms). I will review some of the latest developments for shared parameter

models and present a new estimation method that can handle a general class of problems in which the conditional distribution of longitudinal data is modeled by a linear mixed-effect model, and the conditional distribution of the survival data is given by a Cox proportional hazard model. We allow unknown regression coefficients and time-dependent covariates in both models. The proposed estimators are maximizers of an exact correction to the joint log-likelihood with the frailties eliminated as nuisance parameters, an idea that originated from correction of covariate measurement error in measurement error models. The corrected joint log likelihood is shown to be asymptotically concave and leads to consistent and asymptotically normal estimators. Unlike most published methods for joint modeling, the proposed estimation procedure does not rely on distributional assumptions of the frailties. The proposed method was studied in simulations and applied to a data set from the Hemodialysis (HEMO) Trial. This is joint work with Tom Greene and Bo Hu.

**Speaker's Bio:** Dr. Liang Li is currently an Assistant Staff (equivalent to Assistant Professor) of Biostatistics at the Department of Quantitative Health Sciences, Cleveland Clinic. He received his Ph.D. in Statistics from the University of Wisconsin-Madison in 2003. His research interests include

measurement error models and analysis of longitudinal and survival data. He has over 20 publications on biostatistics methodology (published in journals including Biometrics, Statistics in Medicine, and Journal of Pharmaceutical Statistics), as well as on medical applications (published in NEJM, JAMA, Circulation, etc.).



**Title:** *Advances in Machine Learning: Tree-Based Algorithms: Alternatives to Standard Statistical Modeling CART, TreeNet/MART and Random Forests:*

**Speaker:** Dan Steinberg, Ph.D., Salford Systems

**Abstract:** Recent methodological developments using entirely new technology are showing enormous promise. Dr. Dan Steinberg, Salford Systems' CEO, will discuss the classic advanced data mining methodology developed by Stanford University Professor Jerome Friedman (Statistics, and Stanford Linear Accelerator Center) and former University of California Professor Emeritus, Leo Breiman. TreeNet/MART and Random Forests methodologies will be presented and the application and results of real-world analyses will be shown.

**Speaker's Bio:** Dr. Dan Steinberg, the President of Salford Systems, founded the company in 1982 just after receiving his Ph.D. in Economics at Harvard. He also served as a Member of Technical Staff at AT&T Bell Laboratories and Assistant Professor of Economics at the University of California, San Diego, and has participated in dozens of consulting projects for Fortune 100 clients. He has been honored by the SAS User's Group International (SUGI) and led the modeling teams that won the KDDCup 2000 and the 2002 Duke/Teradata Churn

modeling competition. Dr. Steinberg has published articles in statistics, econometrics, computer science, and marketing journals, and has been a featured data mining issues speaker for the American Marketing Association, American Statistical Association, the Direct Marketing Association and the Casualty Actuarial Society.



**Title:** *Crossover Versus Parallel Design: Dose-Escalation Design Considerations for First-In-Human (FIH) Studies*

**Speaker:** Zhiwu Yan, Ph.D., Abbott Laboratories

**Abstract:** First-in-human studies present particular risks to human subjects. Consequently, such studies are typically small in sample size and are conducted in a time-lagged, dose-escalation fashion. On account of the small number of subjects, it is important to select efficient designs to increase the power of statistical analyses. Crossover designs are often recommended since they generally provide more precise inferences about the treatment effects as compared to parallel designs. On the other hand, various potential problems associated with crossover designs, such as carryover effects, complicated analyses, more dropouts and ethical issues are also reasons for which people prefer parallel designs. Due to the restrictions on the dosing orders in an FIH study, a crossover design we choose may lose considerable amount of power to an optimal crossover design and, in the worst case scenario (e.g., there are carryover effects), it could even be inferior to a parallel design. We will give discussions on this issue. Another important statistical issue that we are going to talk about is that: in a crossover study do we really gain power by inclusion of

the baseline (pre-dose) measurements as a covariate in statistical analyses?

**Speaker's Bio:** Dr. Zhiwu Yan received his Ph.D. in mathematical statistics in 2006 from the University of Illinois at Chicago. He joined Abbott in September 2006 and is a Research Statistician II. His research interests include optimal design of experiments, specializing in crossover designs.

## President's Report

Dear Fellow Members,

Given the severe economic crisis we have inherited from the last administration, I would like to offer a giant stimulus package; we will help the economy by holding all three of our meetings in 2009 in the Bahamas.

Oops, I just had a day dream. Now back to reality that is constrained by our humble budget and power (and the fact that my last name is not "Obama"). First, I wish to take this opportunity to thank you all for continuing to support our organization, the Northeastern Illinois Chapter of the American Statistical Association (NIC-ASA). The chapter membership count appears to have held steady, and we hope it continues to grow with new members. In this regard, I would like to ask for your support in our future endeavors to keep the chapter moving forward and dynamic.

Next, I would like to thank Dr. Martin King for accepting the position of President Elect/Program Chair. Marty is currently a Director of Clinical Statistics at Abbott Labs, with responsibilities in the HIV, Hepatitis C, Dyslipidemia, and Oncology therapeutic areas. He received his Ph.D. in Statistics from the University of North Carolina in 1997 and has worked in pharmaceutical research and development at Abbott for 11+

years. I would also like to thank the following people for donating their time and effort to the common good of the chapter: Melvin Munsaka, Sandra Sinisi, Zhen Zhao, Carl Slenk, Jeff Isaacson, Coleen Hall, Bala Hosmane (who received our Chapter Service Award last year), Carolyn Setze, Clint Lovell, Michele Olds, Rick Rode, Carole Bernett, and Anita Ross.

Next, the Spring meeting will be held on Thursday, March 5th and will feature presentations on semi-parametric joint modeling of longitudinal and survival data by Dr. Liang Li from the Cleveland Clinic Foundation; on data mining methodologies and applications by Dr. Dan Steinberg from Salford Systems; and on first in human clinical trial design by Dr. Zhiwu Yan from Abbott.

The topics for the summer workshop this year will be on clinical trial designs for predictive biomarkers validation and pharmacogenomics (PGx). We are fortunate to have invited two experts to hold a joint workshop on Thursday, June 18<sup>th</sup>: Dr. Sumithra Mandrekar from the Mayo Clinic will talk about predictive biomarkers in clinical trials and Dr. Li Zhang from the genomics group of CDER/FDA will talk about FDA experiences and perspectives on PGx with some insights on the future of PGx for the pharmaceutical industry. We are looking forward to a great workshop on these important topics.

Last but not least, I would like to encourage your active participation in chapter activities and also to encourage you to share your ideas for ways in which we can promote chapter activities. The Chapter is always in need of volunteers; please don't hesitate to contact a member of the Executive Committee if you are able to help out in any way. Participating in the Chapter's activities is an excellent way

to stay current with statistics and to network with fellow statisticians or scientists. It may also sweeten your resume by a few calories and sometimes it can be fun too. I especially encourage you to volunteer to be science fair judges on March 14<sup>th</sup>, 2009 and have some fun with the kids. You may be surprised by how creative they are. (Please see below for details).

I hope everyone has a good and secure job in 2009 and beyond that will serve as the basis for your good health and prosperity. I look forward to seeing many of you at our chapter meetings.

May the Deity of your choice bless you.

~ Xuejun Peng

## Upcoming Meetings

### NIC-ASA Summer Workshop

**Event Dates:** Thursday, June 18

The topics for the summer workshop this year will be on clinical trial designs for predictive biomarkers validation and pharmacogenomics (PGx). See the forthcoming Summer Newsletter or the chapter website for more details.



### NIC-ASA Fall Meeting

**Event Dates:** Thursday, October 15

Save the date for the Chapter's Fall Meeting



### Thirty-Second Annual Midwest Biopharmaceutical Statistics Workshop (MBSW)

**Event Dates:** Monday, May 18 –  
Wednesday, May 20

The workshop will be held at the Alumni Center of Ball State University in Muncie, Indiana. It is co sponsored by Ball State University and the Biopharmaceutical Section of the ASA. Michael O'Connell (Tibco) will present a 1/2-day short course on Integrating Graphics and Statistics across Pharmaceutical Research and Development. The plenary speakers include Scott Evans (Harvard) who will discuss Benefit/Risk and Paul Stang (J&J) who will discuss the Observational Medical Outcomes Partnership. Invited talks will be presented in four parallel tracks: Clinical will focus on Statistical Considerations of the Critical Path Initiative; Discovery/Pre-Clinical will focus on Accelerating Drug Discovery and Characterization; Non Clinical will focus on Integrating Statistics and the Pharmaceutical Sciences in a QbD World; Post-Marketing will focus on Analyses Following Approval. There will also be a contributed Poster Session. Poster abstracts must be submitted by April 20, 2009. Students may submit posters for the Charlie Sampson Award.

A preliminary program, registration form, and other information will be posted at [www.mbswonline.com](http://www.mbswonline.com). Or, contact the Publicity Chair Melvin Munsaka, Takeda Global Research & Development, Inc., email [mmunsaka@tgrd.com](mailto:mmunsaka@tgrd.com), phone (847) 582 3533.



The Chicago ASA usually has a Statistical Lunch each month. For details see the Chicago ASA web site (<http://www.chicagoasa.org/>).



## **Chicago Chapter ASA Workshop Announcement**

**Title:** Short Course on Longitudinal Data Analysis

**Presenter:** Don Hedeker, University of Illinois at Chicago

**Date:** Friday, March 20, 2009

**Location:** The University of Chicago's,  
Booth School of Business,  
The Gleacher Center  
450 North Cityfront Plaza Drive  
Chicago, Illinois 60611-4316  
Time: 8:30am-5pm

**Course summary:** The course will provide an introduction to longitudinal data analysis using mixed effects regression models, drawing on material from the book Longitudinal Data Analysis (Wiley, 2006) using the new SuperMix statistical software program (a 15-day trial edition of SuperMix is available at [www.ssicentral.com/supermix/index.html](http://www.ssicentral.com/supermix/index.html)). The focus will be on application of these models, with direct application illustrated using SuperMix.

In particular, the basic mixed-effects regression model for continuous outcomes will be introduced and described, including use of polynomials for expressing change across time, the multilevel representation of the mixed model, treatment of time-invariant and time-varying covariates, and modeling of the variance-covariance structure of the repeated measures. It will be shown how these models can allow for missing data across time in terms of the outcome variable, thus permitting analysis of subjects who have incomplete data across time. Finally, because

categorical outcomes are common in many research areas, description and application of mixed-effects logistic regression models will also be covered. Attendees are encouraged to download the trial software onto their laptops prior to course, and to bring their laptops with them to the course.



## **Joint Statistical Meeting**

August 1 - 6, 2009 in Washington, DC.



## **SAS Global Forum (formerly SUGI)**

March 22-25, 2009 in Washington, DC



## **Stats Seminars at UIC**

The Mathematics, Statistics, and Computer Science Department of the University of Illinois at Chicago hosts statistical seminars throughout the year. On April 22, 2009, Professor Min Zhang of Purdue University will present a talk on "Bayesian variable selection for high-dimensional models with applications in genomics." For more information, see the seminars website (<http://www.math.uic.edu/seminars/>).

## **Volunteers Opportunities**

### **Volunteers needed for science fair judging**

Mark the date: March 14th, 2009 at Christian Liberty High School in Arlington Heights. Over 400 students will be presenting their projects between the hours of 9:00 and noon that Saturday. NIC-ASA has been proud to be a participant in granting Special Award to the student(s) who exhibit the Best use of Statistics in their Science Fair projects. No

prior judging experience is needed. We will teach you all you need to know.

Last year we also presented Awards at the Region 2 fair at the Museum of Science and Industry in Chicago but this year, that fair is on the same morning. Since Region 6 has always been the one we were more involved with, we will just do this one this year unless we have many volunteers and could cover both. Wouldn't that be great? So mark Saturday morning March 14th, on your calendar and let me know if you can help us out. Believe me, you will be glad to experience this wonderful event. We have many members who make this a yearly event.

Please e-mail me at [cbernett@ix.netcom.com](mailto:cbernett@ix.netcom.com) if you can help out.

Thanks in advance,

~ Carole Bernett

## Getting Involved

Volunteers are needed to help with registration at the Spring and Fall Meetings and Summer Workshop. Registration volunteers will be expected to arrive about a half-hour prior to the start of the registration period and will work at the registration desk as directed by the Chapter Treasurer, Zhen Zhao. This is a great way to connect faces with names and get to know other Chapter members.

Election of the Chapter Officers for 2010 will take place at the start of our Fall Meeting in October 2009. If you would like to run for office or become a Chapter Committee Member or registration volunteer, please contact the Chapter Secretary, Sandra Sinisi.

~ Sandra Sinisi

## Job Opportunities

19706 - Statistical Analyst II

Zurich North America (Schaumburg, Illinois) is looking to expand a growing Predictive Modeling Team. Responsibilities would include working with large datasets including internal and external data, preliminary data analysis, and model building utilizing advanced statistical techniques (GLMs, regression, clustering, trees, etc.). The position requires working in collaboration with other team members, data specialists, BU's, and others. Required skills: strong statistical knowledge, strong quantitative/analytical skills, and proficiency in SAS. Advanced degree in statistics, math, or related.

Hiring Manager: Michael Pauletti

Please send cover letter and CV to: Stacey Kidd ([stacey.kidd@zurichna.com](mailto:stacey.kidd@zurichna.com)) or Renee Alpern ([renee.alpern@zurichna.com](mailto:renee.alpern@zurichna.com))

To find the openings online, go to [www.zurichna.com](http://www.zurichna.com). Click on Careers and then click on Career Opportunities. Select: Function = Actuarial, Location = Schaumburg, and click Search.

## Chapter Website

Our Chapter's website is getting a new look. Please check it out at:  
<http://www.amstat.org/chapters/NortheasternIllinois>.

The website contains lots of information about our Chapter, including events, program information, and contact information for Chapter officers and committee members. You can also peruse current and past Chapter newsletters. Finally, if the speaker provides them, slides/notes from previous

presentations are available to view or download.

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## Publication Info

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The Chapter's purpose, as stated in its Constitution, is "to foster statistics and its applications and promote the interests of the statistical profession...". Accordingly, diverse views are presented. They do not necessarily reflect the opinions of the officers or the policies of the Chapter.