

20th Annual Summer Workshop

Mixed Models for Longitudinal Data: An Applied Introduction

In this workshop attendees will learn about the use of mixed models for analysis of longitudinal, or repeated measures data. The focus will be on application of these models, with direct application illustrated using standard statistical software. Some of the topics to be covered will include:

(1) Mixed models for continuous normal outcomes

The basic mixed-effects regression model 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. Some aspects of model estimation and inference will be reviewed.

(2) Mixed pattern mixture models for missing data

Mixed models allow incomplete data across time and assume that these missing observations are “missing at random” (MAR) under maximum likelihood estimation. An approach that can go further is through the use of pattern mixture models. Here, between subjects variables are formed based on the pattern of missing data across time. These variables are then entered into the mixed model as main effects and interactions to explore the effect of missing data patterns on the outcome of interest. An application of a pattern mixture (mixed-effect) model will be

described, including a description of how to estimate such models using standard software.

(3) Mixed models for dichotomous outcomes

Since dichotomous outcomes are common in many areas of research, mixed models for longitudinal dichotomous data are important. Such models will be presented and described. Attention will be paid to the “subject-specific” interpretation of the parameters in these models, as well as techniques for deriving “population averaged” estimates.

Donald Hedeker
University of Illinois at Chicago

Don Hedeker is Professor of Biostatistics in the School of Public Health. He received both his Ph.D. in Quantitative Psychology and B.A. in Economics from the University of Chicago in 1989 and 1980, respectively. Don’s main expertise is in the development and use of advanced statistical methods for clustered and longitudinal data, with particular emphasis on mixed-effects analysis: MIXREG for normal-theory models, MIXOR for dichotomous and ordinal outcomes, MIXNO for nominal outcomes, and MIXPREG for counts. These programs and manuals are available at <http://www.uic.edu/~hedeker/mix.html>. In 2000, Don was named a Fellow of the American Statistical Association. He was also recognized as a University Scholar by the University of Illinois that same year. Don is a past Associate Editor for Journal of Educational and Behavioral Statistics and is a Consulting Editor for Statistics for Bipolar Disorders. He has also been the principal investigator, co-principal investigator, or co-investigator on over a dozen NICH or CDC research grants.

~Renee Alpern

President's Report

As I mentioned in the Spring 2004 Newsletter, one of my missions as President of the NIC/ASA is to strengthen our Chapter by recruiting more members and encouraging past, present and future members to attend the meetings. One mechanism by which I hope to accomplish this mission is through the use of a survey to assess the needs and desires of our membership. At this time, I would ask that you please take a few minutes to complete the survey that is being sent with the Summer 2004 Newsletter and either drop-off the completed survey at the Summer Workshop if you are planning to attend or return the completed survey to *Noriko Saeki* at nsake@allstate.com. We hope that the information obtained from this survey will help us better understand your needs and allow us to plan for future meetings. I would like to thank you in advance for your help and support, and I hope to see all of you at the Summer Workshop on June 10, 2004.

~Bala Hosmane

Community Activities

Our chapter sent a team of three judges to the Region 6 Science Fair held this year in Arlington Heights at the Christian Liberty High School. Thanks to Dorothy Dunlop and Pat Fleury for helping me out. The following young and budding scientists were awarded savings bonds. Congratulations to the following:

Britta Munson Adlai Stevenson High School
 Mathematics Category
 Statistics in a Backpack III

Rahul Gorawara Adlai Stevenson High School
 Mathematics Category
The Quantitative Portfolio Management Theory –
Short Term

Carli Peters Lincoln Hall Middle School
 Chemistry Category
Does the Type of Gas Affect the Longevity of a
Light Bulb?

Patrick Bushnell Thomas Middle School
 Behavioral Science Category
Metallic Vs. Beethoven

These students will now move forward to the State Competition in Champaign on Saturday, May 8th. If any of you are planning on being in the Champaign area and would like to judge, please notify me at cbernett@ix.netcom.com

The students are very appreciative of the time spent by our members viewing their projects. Our being there also instills in some of them a desire to learn and do more work with statistics in their projects.

~Carole Bernett

Treasurer's Report

BALANCE 01/01/2004	3776.69
INCOME	
2004Spring Meeting	1905.00
Bank Interest (thru 3/31/2004)	6.85
Total Income	1911.85
TOTAL ASSETS	5688.54
EXPENSES	
2004 Spring Meeting	1785.06
Presenter Expenses	320.60
Bank Charges	6.00
Total Expenses	2111.66
BALANCE 3/31/2004	3576.88

~ Jimmy Sun

Chapter Website

Don't forget to visit our Chapter web page at:

<http://www.amstat.org/chapters/NortheasternIllinois>.

The website has lots of information about our Chapter, including events, program information, and contact information for Chapter officers and committee members. You can also peruse PDF versions of current and past Chapter newsletters. Finally, if the speaker provides them, slides/notes from previous presentations are available to view or download.

~Paul Cernohous

Nominations for Chapter Officers

At the business portion of the Fall Chapter Meeting, scheduled for 14 October 2004, we will be electing NIC-ASA chapter officers for the 2005 calendar year. If you would like to be considered a candidate for one of the "open" chapter officer positions (i.e., President-elect and Program Chair, Secretary, or Treasurer), or if you would like to volunteer to serve on one of our NIC-ASA Committees, please contact Rick Rode at either 847-937-3757 or via email at Richard.A.Rode@Abbott.com.

~Richard Rode

Summer Workshop

The summer workshop will be held on June 10, 2004, from 8:30am to 4:30pm, at the Renaissance Chicago North Shore, 933 Skokie Blvd, Northbrook, IL 60062-4004. (Telephone: 847-498-6500.)

~Chris Sullivan and Peter Yu

Calendar

The following are some upcoming regional and national events that may be of interest to you.

- Spring Research Conference on Statistics in Industry and Technology (May 19-21, 2004; Gathersburg, Iowa)
- The 2nd Lehmann Symposium (May 19-22, 2004; Houston, Texas)
- Quality and Productivity Research Conference (May 19-21, 2004; Research Triangle, North Carolina)
- Can Bayesian Approaches to Studying New Treatments Improve Regulatory Decision-Making (May 20-21, 2004; Bethesda, Maryland)
- 27th Annual Midwest Biopharmaceutical Statistics Workshop (May 24-26, 2004; Muncie, Indiana)
- ICSA 2004 Applied Statistics Symposium (June 6-9, 2004; La Jolla [San Diego], California)
- 4th International Bayesian Nonparametrics Workshop (June 13-16, 2004; Rome, Michigan)
- Graybill Conference 2004: Spatial Statistics – Agricultural, Ecological, and Environmental Applications (June 16-18, 2004; Fort Collins, Colorado)
- Workshop on Teaching Introductory Statistics with Data and Activities at Post-Calculus Level (June 21-25, 2004; San Luis Obispo, California)
- XXII International Biometric Conference (July 11-16, 2004; Cairns, Australia)
- Joint Statistical Meetings (August 8-12, 2004; Toronto, Ontario)

For additional meetings or information, visit *Calendar of Events* on the ASA website (www.amstat.org).

~Richard Rode

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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.
