Workshop, "Applications of Hierarchical Linear Models" at the Center for Statistical Consultation and Research (CSCAR) at the University of Michigan, Ann Arbor, MI, March 26-28, 2007.

Applications of Hierarchical Linear Models

March 26, 27, 28, 2007
Brady West

This workshop introduces the analysis of multilevel and longitudinal data, emphasizing the use of hierarchical linear models (HLMs). Participants will be introduced to the use of the HLM software, and each participant will have continuous access to a computer. The workshop will consist of lectures including several hands-on examples using the HLM software.

Many studies in social sciences (e.g., education, human development, public health, sociology) are multilevel, longitudinal, or both. Multilevel data arise when participants are clustered within social settings. The variation and covariation within and between such settings are often of interest substantively and should not be ignored when assessing relationships between explanatory variables and outcomes. In longitudinal research, we repeatedly observe subjects. These repeated measures for each participant will be correlated and explanatory variables may be time-varying or time-invariant. This workshop will consider the issues of analysis that arise in multilevel and longitudinal research settings.

We will first consider two-level cross-sectional studies in which persons (level 1) are nested within organizations (level 2). The level-1 model specifies a process within each organization, and the level-2 model explains how these processes are different between organizations. Next, we will discuss two-level studies of individual growth and compare the structures of these studies to multilevel studies. We will also consider three-level models. We will focus on the case in which repeated measures (level 1) are nested within persons (level 2) who are themselves nested in organizations (level 3).

All of these studies will involve nearly continuous outcomes for which the normality distribution is at least plausible. They will also feature purely nested designs (e.g., persons nested within organizations). The workshop will provide participants with an overview of other types of applications where hierarchical linear models or generalized hierarchical linear models are appropriate (e.g., binary outcomes), and briefly discuss how the HLM software could be used to model such data.

Instructor:
Brady West is a senior statistician and statistical consultant at CSCAR. His CSCAR responsibilities include consulting on linear regression and related techniques, and

his research interests revolve around regression models for clustered and longitudinal data. He has co-authored a book entitled *Linear Mixed Models: A Practical Guide using Statistical Software* (Chapman & Hall / CRC Press) that features the use of the HLM software to fit hierarchical linear models.

Audience:

The workshop is intended primarily for students, faculty, and researchers, with interests in human development, public health, sociology, education, and related fields, but is appropriate for all interested persons who meet the prerequisites.

Prerequisite:

A working knowledge of applied multiple regression and analysis of variance is required.

Provisions:

Enrollees will receive substantial handouts, example computer software output, and a bibliography. Break time for off-site lunch (lunch will not be provided, but refreshments for mid-session breaks will be included.)

When:

Monday, Tuesday, Wednesday, March 26, 27, and 28, 2007,
8:30 a.m. - 5:00 p.m.

Location:

Rackham Bldg, 2nd floor, North Alcove in the West Study Hall.

Size:

Up to 15 participants with 1 person per computer

Fee:

Registration until March 12, 2007:

$300 for University of Michigan affiliated faculty, staff and students
$650 for others

Registration after March 12,, 2007:

$360 for University of Michigan affiliated faculty, staff and students
$780 for others

Registration:

Call CSCAR at 734-764-7828. Enrollment is limited. Please make check payable to: CSCAR--University of Michigan, or give the University grant/project to be billed. Send check to CSCAR, 3550 Rackham Bldg., University of Michigan, 915 E. Washington St. Ann Arbor, MI 48109-1070