Multilevel Modeling of Hierarchical and Longitudinal Data Using SAS(R)

Code:	BHLM42
Length:	0 days
URL:	View Online

This course teaches how to identify complex and dynamic patterns within multilevel data to inform a variety of decision-making needs. The course provides a conceptual understanding of multilevel linear models (MLM) and multilevel generalized linear models (MGLM) and their appropriate use in a variety of settings.
The self-study e-learning includes:

- Annotatable course notes in PDF format.
- Virtual lab time to practice.

Skills Gained

-
- Use basic multilevel models.
- Use three-level and cross-classified models.
- Use generalized multilevel models for discrete dependent variables.

Who Can Benefit

- Researchers in psychology, education, social science, medicine, and business, or others analyzing data with multilevel nesting structure

Prerequisites

- Before attending this course, you should:
- Preferably, be familiar with the basic structure and concepts of SAS (for example, the DATA step and procedures).
- Be familiar with concepts of linear models such as regression and ANOVA and with generalized linear models such as logistic regression.
- Be familiar with linear mixed models to enhance understanding, although this is not necessary to benefit from the course.

Course Details

Introduction to Multilevel Models

-
- Nested data structures.
- Ignoring dependence.
- Methods for modeling dependent data structures.
- The random-effects ANOVA model.

Basic Multilevel Models

-
- Random-effects regression.
- Centering predictors in multilevel models.
- Model building.
- A comment on notation (self-study).
- Intercepts as outcomes.

Slopes as Outcomes and Model Evaluation

-
- Slopes as outcomes.
- Model assumptions.
- Model assessment and diagnostics.
- Maximum likelihood estimation.

The Analysis of Repeated Measures

-
- The conceptualization of a growth curve.
- The multilevel growth model.
- Time-invariant predictors of growth (self-study).
- Multiple groups models.

Three-Level and Cross-Classified Models

-
- Three-level models.
- Three-level models with random slopes.
- Cross-classified models.

Multilevel Models for Discrete Dependent Variables

-
- Discrete dependent variables.
- Generalized linear models.
- Multilevel generalized linear models.
- Additional considerations.

Generalized Multilevel Linear Models for Longitudinal Data (Self-Study)

-
- Complexities of longitudinal data structures.
- The unconditional growth model for discrete dependent variables.
- Conditional growth models for discrete dependent variables.
