Applied Multilevel Models for Longitudinal and Clustered Data

ICPSR Summer Workshop in Boulder, Colorado
7/13/2015 – 7/17/2015

Presented by:

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Course Textbook:
http://www.pilesofvariance.com/

ICPSR Materials will be available for download at:
http://jonathantemplin.com

COURSE OVERVIEW

Multilevel models are known by many synonyms (i.e., hierarchical linear models, general linear mixed models). The defining feature of these models is their capacity to provide quantification and prediction of random variance due to multiple sampling dimensions (across occasions, persons, or groups). Multilevel models offer many advantages for analyzing longitudinal data, such as flexible strategies for modeling change and individual differences in change, the examination of time-invariant or time-varying predictor effects, and the use of all available complete observations. This workshop will serve as an applied introduction to multilevel models for longitudinal data, including studies of individual change (i.e., growth curve models), individual fluctuation (i.e., daily diary designs), and multiple dimensions of within-person time (i.e., measurement burst designs).

The primary software package utilized for instruction will be SAS, but some reference examples using SPSS and STATA may also be provided. The course will also include daily opportunities for hands-on practice and individual consultation. Participants should be familiar with the general linear model (e.g., ANOVA and regression), but no prior experience with multilevel models or knowledge of advanced mathematics (e.g., matrix algebra) is assumed.
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<td>9:00–10:15</td>
<td>Lecture 1: Introduction to Multilevel Models</td>
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<td>10:30–11:30</td>
<td>Example 1: General Linear Models and Repeated Measures ANOVA</td>
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<td>Lecture 2: Describing Within-Person Fluctuation over Time</td>
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<td>Example 2: Alternative Covariance Structure Models for Fluctuation</td>
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<td>Lab Time 1: Getting Data Ready for Longitudinal Models</td>
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<td>Tuesday</td>
<td>9:00–10:15</td>
<td>Lecture 3: Describing Within-Person Change over Time</td>
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<td>Example 3: Random Effects Models for Change</td>
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<td>Wednesday</td>
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<td>Lecture 4: Time-Invariant Predictors in Longitudinal Models</td>
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<td>Example 4: Time-Invariant Predictors of Change</td>
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<td>Lecture 5: Multilevel models for clustered data</td>
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<td>Example 5: Two-Level Clustered Data – Students within Schools</td>
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<td>Thursday</td>
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<td>Lecture 6: Time-Varying Predictors for Fluctuation</td>
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<td>10:30–11:45</td>
<td>Example 6: Time-Varying Predictors for Fluctuation</td>
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<td>Example 8: Three-Level Longitudinal Models</td>
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