

## Introduction to Hierarchical Linear Models for Causal Inference in Multi-level Settings: Agenda

(Phrases in bold provide the key to data sets and power-point presentations)

### Day 1: July 8

9:00 - 10:30	Introduction and overview of hierarchical linear models
10:30 - 10:50	Break - refreshments provided
10:50 - 12:00	Introduction to the HLM 7 program and computer demonstration with application to the “ <b>social distribution of achievement in US high schools</b> ”:
12:00 - 1:45	Lunch and <i>Data analysis exercise</i> : Study the distribution of impacts in a multi-site trial with application to the “ <b>impact of small schools</b> ” (simulated data).
1:45 - 3:10	Multi-site trials and Cluster Randomized Trials: Estimands and Estimation
3:10 - 3:30	Break - refreshments provided
3:30 - 5:00	Introduction to the three level model with application to “ <b>school-specific impacts of class size</b> in Tennessee STAR.”

### Day 2: July 9

9:00 - 10:30	Instrumental variables with application to non-compliance in multi-site trials with application to “ <b>impact of participation in small schools</b> ” (simulated data).
10:30 - 10:50	Break - refreshments provided
10:50 - 12:00	Instrumental variables for the causal effect of a continuous mediator with application to the “ <b>impact of realized class size</b> in Tennessee STAR.”
12:00 - 1:45	<i>Data analysis exercise</i>
1:45 - 3:10	Propensity score stratification in non-randomized studies with application to “ <b>grade retention</b> in ECLS.”
3:10 - 3:30	Break - refreshments provided
3:30 - 5:00	<i>Data analysis exercise</i>

***Day 3: July 10***

9:00 - 10:30	Application of HLM to the study of individual change: the case of “ <b>child-specific growth curves.</b> ”
10:30 - 10:50	Break - refreshments provided
10:50 - 12:00	Introduction to the cross-classified random effects model with application to “ <b>teacher value added.</b> ”
12:00 - 1:00	Lunch
1:00 - 2:30	Time-varying confounding and inverse-probability-of-treatment weighting with application to “ <b>impact of intensive math instruction.</b> ”
2:30- 3:10	Data analysis exercise
3:30 - 4:30	Implications for research design