



UCLA CTSI Biostatistics Seminar

Accelerated Longitudinal Designs: Methods for studying longitudinal change in outcomes sensitive to generational differences

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Abstract: Developmental models have broad applicability across the biomedical and social sciences and have been used to understand how traits or measures change as we age. While developmental researchers are primarily interested in maturational change, the traditional research designs used to study this change make assumptions about the nature of development, often ignoring or confounding the influence of generational change. While ignoring generational change can be appropriate for outcomes that are developmentally homogeneous across long periods of time; for knowledge or behavior that may be influenced by cultural changes, alternatives to the traditional methods are needed. The Accelerated Longitudinal Design (ALD) provides one such alternative through the study of multiple birth-cohorts, simultaneously, in a longitudinal fashion, with overlap in the age distributions between the cohorts. These designs allow for the capturing of maturational change with lower costs, less time, and less attrition than traditional longitudinal designs. The ability to model between-cohort differences provides an additional benefit for researchers interested in developing age-based trajectories that incorporate generational variability. In this talk, we review the current state of methodological research on ALDs and present simulations to address the utility of ALDs in small samples. We utilize Monte Carlo simulation methods to demonstrate how the statistical power and bias in the ALD is comparable to that of the traditional single-cohort longitudinal design for both linear and nonlinear models and discuss considerations for when between-cohort differences in development are present. We additionally discuss considerations for the modeling of cohort membership and alternate strategies for cohort inclusion.

***** Lunch Provided *****

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