

The Departments of Biostatistics and Statistics Presents:

Childhood Health and Behavior: A Longitudinal Study

Presented by Dr. Matthew Gurka, PhD of
West Virginia University
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Refreshments in MDS 206 3:30 – 4:00 PM

Colloquium in MDS 220 4:00 – 5:00 PM

ABSTRACT:

Child development and chronic illness are integrally related. The relationship between the health of the child and developmental outcomes has been an active area of research. Numerous studies have found associations between chronic illnesses, such as asthma, and behavioral problems in children. Analysis of data from a large longitudinal study, the National Institute of Child Health and Human Development (NICHD) Study of Early Child Care and Youth Development (SECCYD), allowed for further examination of these relationships throughout childhood. But, the required longitudinal data analysis motivated statistical research as well. Specifically, the initial study of childhood asthma and behavior illustrated how accurate inference for the fixed effects in the linear mixed model depends on the covariance model for the repeated measures. Simulation studies have revealed biased inference for the fixed effects with a mis-specified covariance structure, at least in small samples. We proved that incorrectly assuming a simple random intercept model (i.e., compound symmetry) leads to optimistically biased inference about the fixed effects, in both small *and* large samples. Simulations illustrate the bias and evaluate a variety of strategies aimed at avoiding it.