CANAM ONLINE SYMPOSIUM SERIES IN EDUCATIONAL RESEARCH METHODS

Fitting a Linear-Linear Piecewise Growth Mixture Model with Unknown Knots

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Friday, December 4, 2015

University of Minnesota, Peik Hall Room 28	University of Nebraska-Lincoln, TEAC Room 112	University of Alberta, Education Centre North Room 6-1110	University of Iowa, Lindquist Center Room N221	University of Maryland, Benjamin Building Room 3233

2:30 – 4 p.m. (CDT)

A linear–linear piecewise growth mixture model (PGMM) is appropriate for analyzing segmented change in individual behavior over time, where the data come from a mixture of two or more latent classes, and the underlying growth trajectories in the different segments of the developmental process within each latent class are linear. A PGMM allows the knot (change point), the time of transition from one phase to another, to be estimated (when it is not known *a priori*) along with the other model parameters. To assist researchers in deciding which estimation method is most advantageous, the current research compares two popular approaches to inference for PGMMs: maximum likelihood (ML) via an expectation–maximization (EM) algorithm, and Markov chain Monte Carlo (MCMC) for Bayesian inference. The results show that MCMC Bayesian parameter estimation outperformed ML via EM in nearly every simulation scenario. The Bayesian procedure is illustrated by fitting a PGMM model to ECLS-K math achievement data.

Kohli, N., Hughes, J., Wang, C., Zopluoglu, C., & Davison, M. L. (2015). Fitting a linear–linear piecewise growth mixture model with unknown knots: A comparison of two common approaches to inference. *Psychological Methods*, *20*(2), 259–275 (http://psycnet.apa.org/psycinfo/2015-15474-001/).

If you have questions about this seminar, contact Professor Mark Davison, mld@umn.edu.

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