Emory University
Dept of Quantitative Theory & Methods
2024–25 Speaker Series

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Mixed Effects Models for Skeptics

Mixed effects models are used routinely in the social sciences to share information across multiple groups, such as schools or counties. The statistical properties of such models are often quite good on average across groups, but may be poor for any specific group. For example, commonly-used confidence interval procedures may maintain a target coverage rate on average across groups, but have a near zero coverage rate for a group that differs substantially from the others. As such, this unfairness in statistical performance can most adversely affect groups about which there is most concern. In this talk, we review some basic mixed effects modeling tools, discuss their group-specific properties, and present some new tools for multiple testing and inference problems that permit information sharing, while maintaining equal coverage rates for each group.

October 21, 1 PM, PAIS 561