Mathematics, Statistics, and Computer Science   **@ UIC**

Statistics and Data Science Seminar

Causality in the joint analysis of longitudinal and survival data

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Abstract: In many biomedical studies, disease progress is monitored by a biomarker over time, e.g., repeated measures of CD4, hemoglobin level in end stage renal disease (ESRD) patients. The endpoint of interest, e.g., death or diagnosis of a specific disease, is correlated with the longitudinal biomarker. The causal relation between the longitudinal and time to event data is of interest. In this paper we examine the causality in the analysis of longitudinal and survival data. We consider four questions: (1) whether the longitudinal biomarker is a mediator between treatment and survival outcome; (2) whether the biomarker is a surrogate marker; (3) whether the relation between biomarker and survival outcome is purely due to an unknown confounder; (4) whether there is a mediator moderator for treatment. We illustrate our methods by data from two clinical trials: an AIDS study and a liver cirrhosis study.

Wednesday, November 22 at 4:00 PM in SEO 636