

Continuous Time Models for Causal Mediation Analysis of Longitudinal Data

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ABSTRACT

While causal mediation analysis has been well-developed for a single measured mediator and final outcome, relatively little attention has been given to the case of a repeatedly measured mediator and outcome. Available approaches involve discrete-time models that limit inference to the particular measurement times used and do not recognize the continuous nature of the mediation process over time. To circumvent these limitations, we present a new continuous time approach to causal mediation analysis. We introduce a causal differential equations model that we reformulate as joint repeated measures models, thus allowing convenient model formulation and fitting. Identifiability of natural direct and indirect effects is obtained via a continuous time extension of the sequential ignorability assumption. Proposed estimators show good properties in simulations studies and the new approach is applied to observational data to study sugary drink consumption as a mediator of the effect of socioeconomic status on dental caries in children.

12:00 Noon, Tuesday, November 27, 2018
47 College Street, Room 106B

11:45 AM - Lunch served outside Room 106B

