Causal Inference for Continuous Time Processes When Covariates Are Observed Only at Discrete Times

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Abstract

Most of the work on g-estimation for causal inference in longitudinal data assumes a discrete time underlying data generating process. However, in some studies, it is more reasonable to assume that the data are generated from a continuous time process, but the covariates are only observable at discrete times. For this setting, we study the assumptions needed for discrete time g-estimation to provide consistent estimates and present a new method that provides consistent estimates under weaker assumptions than usual discrete time g-estimation. We use our new method to study the effect of diarrhea on childrens height, using a data set collected following a massive flood in Bangladesh. This is joint work with Mingyuan Zhang and Marshall Joffe.