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Instrument search in pseudo-likelihood approach for nonignorable nonresponse

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Abstract
With nonignorable nonresponse, an effective method to construct valid estimators of population parameters is to use a covariate vector called instrument that can be excluded from the nonresponse propensity, but are associated with the response even when other covariates are conditioned. The existing work in this approach assumes such an instrument is given, which is frequently not the case in applications. In this paper, we investigate how to search for an instrument from a given set of covariates, based on a pseudo likelihood approach assuming a parametric distribution of response conditioned on covariates and a totally unspecified nonresponse propensity. We propose a method and show that it produces a consistent instrument selection as the sample size tends to infinity, under some regularity conditions. The proposed method is examined in a simulation study and illustrated in a real data example.

Keywords Nonignorable nonresponse · Nonresponse instrument · Pseudo-likelihood · Variable selection

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