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A way of eliminating a nuisance parameter with the plug-in method utilizing an independent sample

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Abstract
The estimation of the structural parameter in the presence of a nuisance parameter is an old and challenging problem. The usual estimating method is the plug-in likelihood method, using the same data set for estimating both the structural as well as the nuisance parameters. The aim of this paper is to provide an optimal estimating function for the estimation of the parameter of interest using the plug-in method, when an estimator for the nuisance parameter is available independent of the sample used to estimate the structural parameter.

Keywords Estimating function · Nuisance parameter · Adaptive score function · Optimality criteria

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