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Summary: Most existing studies on missing-data problems focus on the ignorable missing case, where the missing probability depends only on observable quantities. By contrast, research on nonignorable missing data problems is quite limited. The main difficulty in solving such problems is that the missing probability and the regression likelihood function are tangled together in the likelihood presentation. Furthermore, the model parameters may not be identifiable, even under strong parametric model assumptions. In this paper, we discuss a semiparametric model for data with nonignorable missing responses, and propose a maximum full semiparametric likelihood estimation method. This method is an efficient combination of the parametric conditional likelihood and the marginal nonparametric biased sampling likelihood. We further show that the proposed estimators for the underlying parameters and the response mean are semiparametrically efficient. Extensive simulations and a real-data analysis demonstrate the advantage of the proposed method over competing methods.

MSC:
62-XX Statistics

Keywords:
density ratio model; empirical likelihood; non-ignorable missing data

Full Text: DOI References:

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