

Fitting Models to Complex Survey Data Accounting for Nonignorable Sampling and Nonresponse

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When the sample selection probabilities and/or the response probabilities are related to the model dependent variable even after conditioning on the model covariates, the model holding for the sample data is different from the model holding in the population from which the sample is taken. Ignoring the sample selection or response mechanism in this case may result in biased inference. Accounting for possible sample selection bias is relatively simple because the sample selection probabilities are usually known. In this paper we consider the much harder problem where in addition to sample selection bias, the response mechanism is also not ignorable, with unknown response probabilities (Not missing at random- NMAR nonresponse.) Our approach uses the empirical likelihood, which is defined with respect to the model holding for the data observed for the responding units. Simulation results with binary dependent outcomes illustrate the good performance of the proposed approach.

Key Words: Empirical likelihood, NMAR nonresponse, Sample model.