

# NONPARAMETRIC MAXIMUM LIKELIHOOD ESTIMATION OF WITHIN-SET RANKING ERRORS IN RANKED SET SAMPLING

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ABSTRACT. In this talk, as a follow up to lecture 1, I develop a distribution-free statistical inference for the quality of within-set judgment ranking information for ranked set samples. The judgment ranking information is modeled through Bohn-Wolfe model. The cumulative distribution function (CDF) is treated as nuisance parameter and the parameters of Bohn-Wolfe model are estimated by maximizing nonparametric likelihood function. A missing data model is introduced to construct an efficient computational algorithm. The advantages of the new estimators are that they require essentially no assumption on the underlying distribution function, that they provide an estimate of the quality of within-set ranking information, and that they lead to a valid statistical inference even under imperfect ranking. The proposed estimators are applied to a water flow data set to estimate judgment ranking information and underlying distribution function.

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