

Empirical likelihood is a general non-parametric inference methodology. It uses likelihood principle in a way that is analogous to that of parametric likelihoods. In a wide range of applications the methodology was shown to provide likelihood ratio statistics that have limiting chi-square distributions and observe a nonparametric version of Wilks theorem. Amongst recent extensions of the empirical likelihood are the analysis of censored data, longitudinal data and semi-parametric regression model. However, this property of Wilks theorem only remained true in some but not in others. This motivates our discussion of relative optimality of extended empirical likelihood methods. We compare extended empirical likelihood methods and evaluate their relative optimality by comparing the confidence regions provided by inverting the likelihood ratio tests. We show that those extension methods with its likelihood ratio statistic observing the Wilks theorem provides the smallest confidence region. Specific examples are provided for the case of censored data analysis and estimating equations involving nuisance parameters.