

Testing in nonparametric ANCOVA model based on ridit reliability functional

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Abstract In the spirit of Bross (Biometrics 14:18–38, 1958), this paper considers ridit reliability functionals to develop test procedures for the equality of $K(> 2)$ treatment effects in nonparametric analysis of covariance (ANCOVA) model with d covariates based on two different methods. The procedures are asymptotically distribution free and are not based on the assumption that the distribution functions (d.f.'s) of the response variable and the associated covariates are continuous. By means of simulation study, the proposed methods are compared with the methods provided by Tsangari and Akritas (J Multivar Anal 88:298–319, 2004) and Bathke and Brunner (Recent advances and trends in nonparametric statistics, Elsevier, Amsterdam, 2003) under ANCOVA in terms of type I error rate and power.

Keywords Asymptotic distribution · Nonparametric ANCOVA model · Ridit · U-statistic · Nadaraya–Watson weight · Bandwidth

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