Distribution-Free Confidence Interval for a Parameter of Wilcoxon-Mann-Whitney Type for Ordered Categories and Progressive Censoring

Mohamed Ismail ,Halperin, M., Hamdy, M. I., and Thall, P. F.

Abstract

Halperin, Gilbert, and Lachin (1987, Biometrics 43, 71-80) obtain confidence intervals for Pr(X less than Y) based on the two-sample Wilcoxon statistic for continuous data. Their approach is applied here to ordered categorical data and right-censored continuous data, using the generalization zeta = Pr(X less than Y) + 1/2Pr(X = Y) to account for ties. Deviations from nominal coverage probability for various sample sizes and values of zeta are obtained via simulation of either three or six ordered categories based on underlying Poisson or exponential distributions. The simulation results indicate that the proposed method performs quite well, and it is apparently superior to the approach of Hochberg (1981, Communications in Statistics--Theory and Methods A10, 1719-1732) for values of zeta far from 1/2