Confidence Intervals for a Discrete Population Median

Denis Larocque and Ronald H. Randles*

HEC, Montreal and University of Florida

E-Mail: denis.larocque@hec.ca; rrandles@stat.ufl.edu

Abstract: In this paper, we consider the problem of constructing confidence intervals for a population median when the underlying population is discrete. We describe seven methods of assigning confidence levels to order statistic based confidence intervals, all of which are easy to implement. A simulation study shows that, with discrete populations, it is possible to obtain consistently more accurate confidence levels and shorter intervals compared to the ones reported by the classical method which is implemented in commercial software. More precisely, the best results are obtained by inverting a two-tailed sign test that properly takes into account tied observations. Some real data examples illustrate the use of these confidence intervals.