

In addition to the usual sources of error that have been long studied by statisticians, many data sets have been rounded off in some manner, either by the measuring device or storage on a computer. In this paper we investigate theoretical properties of generalized fiducial distribution introduced in Hannig (2009) for discretized data. Limit theorems are provided for both fixed sample size with increasing precision of the discretization, and increasing sample size with fixed precision of the discretization. The former provides an attractive definition of generalized fiducial distribution for certain types of exactly observed data overcoming a previous non-uniqueness due to Borel paradox. The latter establishes asymptotic correctness of generalized fiducial inference, in the frequentist, repeated sampling sense, for i.i.d. discretized data under very mild conditions.