

## Population Size Estimation Based on the GPD

**Authors :** O. Anan, D. Böhning, A. Maruotti

**Abstract :** The purpose of the study is to estimate the elusive target population size under a truncated count model that accounts for heterogeneity. The purposed estimator is based on the generalized Poisson distribution (GPD), which extends the Poisson distribution by adding a dispersion parameter. Thus, it becomes an useful model for capture-recapture data where concurrent events are not homogeneous. In addition, it can account for over-dispersion and under-dispersion. The ratios of neighboring frequency counts are used as a tool for investigating the validity of whether generalized Poisson or Poisson distribution. Since capture-recapture approaches do not provide the zero counts, the estimated parameters can be achieved by modifying the EM-algorithm technique for the zero-truncated generalized Poisson distribution. The properties and the comparative performance of proposed estimator were investigated through simulation studies. Furthermore, some empirical examples are represented insights on the behavior of the estimators.

**Keywords :** capture, recapture methods, ratio plot, heterogeneous population, zero-truncated count

**Conference Title :** ICPS 2016 : International Conference on Probability and Statistics

**Conference Location :** Paris, France

**Conference Dates :** January 21-22, 2016