

## ESTIMATION OF PARAMETERS IN THE DISCRETE DISTRIBUTIONS OF ORDER $k$

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**Abstract.** This paper considers estimating parameters in the discrete distributions of order  $k$  such as the binomial, the geometric, the Poisson and the logarithmic series distributions of order  $k$ . It is discussed how to calculate maximum likelihood estimates of parameters of the distributions based on independent observations. Further, asymptotic properties of estimators by the method of moments are investigated. In some cases, it is found that the values of asymptotic efficiency of the moment estimators are surprisingly close to one.

*Key words and phrases:* Binomial distribution of order  $k$ , geometric distribution of order  $k$ , Poisson distribution of order  $k$ , logarithmic series distribution of order  $k$ , parametric estimation, method of moments, maximum likelihood.