

Estimation of Population Mean Using Characteristics of Poisson Distribution: An Application to Earthquake Data

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Abstract : This paper proposed a generalized class of estimators, an exponential class of estimators based on the adaption of Sharma and Singh (2015) and Solanki and Singh (2013), and a simple difference estimator for estimating unknown population mean in the case of Poisson distributed population in simple random sampling without replacement. The expressions for mean square errors of the proposed classes of estimators are derived from the first order of approximation. It is shown that the adapted version of Solanki and Singh (2013), the exponential class of estimator, is always more efficient than the usual estimator, ratio, product, exponential ratio, and exponential product type estimators and equally efficient to simple difference estimator. Moreover, the adapted version of Sharma and Singh's (2015) estimator is always more efficient than all the estimators available in the literature. In addition, theoretical findings are supported by an empirical study to show the superiority of the constructed estimators over others with an application to earthquake data of Turkey.

Keywords : auxiliary attribute, point bi-serial, mean square error, simple random sampling, Poisson distribution

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