Regression Modeling Using Generalized Pareto-IV Distribution with Application to Household Budget Survey

Gadde Srinivasa Rao

Department of Mathematics and Statistics, The University of Dodoma, Dodoma, Tanzania.

Email: gaddesrao@gmail.com

Abstract

The study introduced the new regression model by T-X family technique for Type-I half-logistic and Pareto-IV distribution (TIHLPIV) that had to solve the weaknesses of mixed methods (techniques), which are limited to applicability, data requirements, computational complexity, and data transformation was needed for generalization (G-family) of combined distributions. The T-X technique allowed flexibility, risk assessment, environmental studies, quality control, scientific research in modeling different kinds of data, and covered a wider range of real-life applications such as survival and lifetime data, hydrology, economics (income inequality), and engineering. The main objective of the study is to introduce new regression modeling using generalized Pareto-IV distribution (TIHLPIV) with application to the Household Budget Survey (HBSs) of the 2017–18 year on the Tanzania Mainland. According to empirical results, it is revealed that the proposed model gives better results than other existing models.

Keywords: Regression model; Pareto-IV distribution; Type-I half-logistic; household budget survey; statistical properties.