

Generalized p -Values for Comparing Regression Lines

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One frequently encountered problem in scientific research is to assess whether two regression models for two groups or two treatments, etc., are the same or not. However, the regression models rarely hold over the whole space of the covariates. Therefore testing the difference between the two models over a restricted region or an arbitrary interval one is interested is therefore useful. In this research, we develop testing procedures to detect if one regression line is strictly greater than the other for given a specific region. Our testing procedures are developed mainly based on the concept of generalized p -value (GPV), which has been successfully used to provide small sample solutions for many hypothesis testing problems when nuisance parameters are present. Moreover, detailed statistical simulation studies will be conducted to evaluate the effectiveness by using their empirical size and power of the proposed procedures.

Key Words: Generalized pivotal quantities, Generalized test variables, Over a finite interval