

SOME NEW PROPOSED RIDGE PARAMETERS FOR THE LOGISTIC REGRESSION MODEL

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ABSTRACT

The parameter estimation method that based on the minimum residual sum of squares is unsatisfactory in the presence of multi collinearity. In (1970) Hoerl and Kennard introduced an alternative estimation approach which is called the ridge regression (RR) estimator. In RR approach, ridge parameter plays an important role in the parameter estimation. Many researchers are suggested various methods for determining the ridge parameter for the RR approach and they generalized their methods to be applicable for the logistic ridge regression (LRR) model. Schaeffer et al. (1984) was the first who proposed a LRR estimator. In this article, new methods for choosing the ridge parameter for logistic regression (LR) are proposed. The performance of the proposed methods are evaluated and compared with other models that having different previously suggested ridge parameter through a simulation study in terms of mean square error (MSE). The developed technique in this communication seems to be very reasonable because of having smaller MSE. The results from the simulation study generally show that all the LRR estimators have a lower MSE than the maximum likelihood (ML) estimator and our suggested LRR estimators were superior in most of the cases.

KEYWORDS: Logistic Regression, Maximum Likelihood, Monte Carlo Simulations, MSE, Multicollinearity, Ridge Regression, Ridge Parameter