**Binary response modeling and validation of its predictive ability**


ABSTRACT

Assessment of the quality of the logistic regression model is central to the conclusion. Application of logistic regression modeling techniques without subsequent performance analysis regarding predictive ability of the fitted model can result in poorly fitting results that inaccurately predict outcomes on new subjects. It is not unusual for statisticians to check fitted model with validation. Validation of predictions from logistic regression models is of paramount importance. Model validation is possibly the most important step in the model building sequence. Model validity refers to the stability and reasonableness of the logistic regression coefficients, the plausibility and usability of the fitted logistic regression function, and the ability to generalize inferences drawn from the analysis. The aim of this study is to evaluate and measure how effectively the fitted logistic regression model describes the outcome variable both in the sample and in the population. A straightforward and fairly popular split-sample approach has been used here to validate the model. The present study have dealt with how to measure the quality of the fit of a given model and how to evaluate its performance regarding the predictive ability in order to avoid poorly fitted model. Different summary measures of goodness-of-fit and other supplementary indices of predictive ability of the fitted model indicate that the fitted binary logistic regression model can be used to predict the new subjects.



**Keyword:** Validation; Training sample; Deviance; Prediction error rate; ROC curve