



Linear programming for detecting separation in polytomous logistic regression

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The parameter estimation in logistic regression model is known to be dependent on the data configuration. While the logistic model work well for many situations, may not work when the groups of observations are completely separated. Separation is a common problem in the logistic regression. Mathematical Programming approaches have been used for detecting separated data in logistic regression, but most of these researches have focused on the two group problem. In this paper we propose a linear programming formulation to detect separation in polytomous logistic regression. The proposed approach classifies data as completely separated, quasi-separated or overlapped, and can be used as part of the parameter estimation. Comparison with other methods, using different data sets taken from the literature, shows that our formulation may suggest an efficient alternative to mathematical programming approaches for the multiple-group problem.

Keywords: Complete Separation; Polytomous Response.