

Binary Regression with Stochastic Covariates

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This seminar proposes an enhancement of logistic regression analysis that can be used to assess the association of random covariates with binary response variables. We consider stochastic non-normal covariates and utilize modified maximum likelihood methodology. We will cover the motivation and background of the proposed methods, along with an illustration using data on risk factors for low birth weight in infants. We show that the proposed estimators are highly efficient; we also show that treating the risk factor as non-stochastic when they are in fact stochastic results in bias and loss of efficiency.

Key Words: Stochastic Covariates, Modified Maximum Likelihood, Logistic Regression, Order Statistics, Robustness, Outliers