Correlations Versus Odds Ratios Based Inferences in Bivariate Binary Models

When bivariate binary responses are collected from a large number of independent individuals in a cross-sectional setup, it is standard to use a multinomial distribution with a cell probability modeled as a function of two marginal parameters and an association parameter. This approach makes the interpretation of marginal probabilities in terms of the model parameters difficult. In this talk, we model the marginal probabilities as functions of corresponding marginal parameters only and a correlation based conditional probability function is modeled to obtain the joint probabilities. Likelihood and quasi-likelihood estimation for inference about this model are discussed.