

DS² Seminar

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Simple ways to Interpret Effects in Modeling Binary and Ordinal Data

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Probability-based effect measures for models for binary and ordinal response variables can be simpler to interpret than logistic and probit regression model parameters and their corresponding effect measures, such as odds ratios. For describing the effect of an explanatory variable while adjusting for others in modeling a binary response, it is sometimes possible to employ the identity and log link functions to generate simple effect measures. When such link functions are inappropriate, one can still construct analogous effect measures. For comparing groups that are levels of categorical explanatory variables or relevant values for quantitative explanatory variables, such measures can be based on average differences or ratios of the probability modeled. For quantitative explanatory variables, they can also be based on average instantaneous rates of change for the probability. Analogous measures are proposed for interpreting effects in models for ordinal responses based on applying a link function to cumulative probabilities. The measures are also sometimes applicable with nonlinear predictors, such as in generalized additive models. The methods for binary and ordinal data are illustrated with examples and implemented with R software. Parts of this work are joint with Maria Kateri, Claudia Tarantola, and Roberta Varriale.



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