A new Neyman-orthogonal estimator for the coefficient in a high-dimensional ordinal logit model

This paper derives a new estimator for the coefficients of interest in what is called a "sparse, high-dimensional ordinal-logistic model". Describing these terms in reverse order, the model uses an ordinal-logistic structure for the outcome. The model is high dimensional because the number of covariates that might need to be included is too large for the sample size at hand. The model is sparse because only a few of the many potential covariates need to be included in the model.

The new estimator for the coefficients of interest is robust to the selection of the few covariates that need to be included in the model, a property known as Neyman-orthogonality. The paper explains why naive estimators that simply include the selected covariates do not perform well and it includes simulations showing that the new Neyman-orthogonal estimator performs well in finite samples while the naive estimator does not. The paper also derives a new representation of the scores of the ordinal logistic model. This representation has a regression-like structure, and it makes feasible the estimation of the bias removal terms needed by the Neyman-orthogonal estimator.