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Analysis of Ordered Categorical Data from Designed Experiments

The responses of interest in many designed experiments are ordered categorical. Taguchi Accumulation analysis (AA), Nair's Scoring Scheme (1986) and Jeng's weighted Probability Scoring Scheme are existing approaches for analyzing ordered categorical data from industrial experiments for optimal factor settings in quality improvement studies. In this work, we discuss analyses of ordered categorical data using cumulative link models. This approach models both the location and dispersion effects and it is easy to implement. Relative Performances of the four approaches are compared through simulation studies and analysis of real data set.