Partial Ordered Stereotype Model, a New Model for Ordinal Data

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Ordinal response variables are prevalent in many fields and require specific methods that properly respect the natural ordering of their categories. However, many researchers and practitioners still apply techniques designed for nominal or continuous variables to analyse ordinal data, often treating the response categories as equally spaced when they may not be. This approach can lead to misleading results.

My talk presents the Partial Ordered Stereotype Model (POSM), an extension of the Ordered Stereotype Model (OSM) for ordinal response variables. The OSM does not assume equal-spaced response categories by incorporating score parameters, which specify the potentially unequal distances between adjacent response categories. These parameters reflect the discriminant capability of the covariates, indicating how effectively they can distinguish between response categories. However, different covariates may exhibit distinct discriminant capabilities. The POSM addresses this by allowing different sets of score parameters within the same model, thus capturing the characteristics of each covariate in a single framework. An application of the model using a real-world dataset in aquaculture is included to show the utility and interpretation of the method. Our objective is to identify variables impacting salmon health and assess how these variables differentiate between health levels.

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