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A Unified Framework for Choice Experiments: Integrating Strict Preferences and Ties

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In most discrete choice experiments (DCEs), respondents are asked to choose their preferred alternative. But it is also possible to ask them to indicate the worst, or the best and worst alternative among the provided alternatives or to rank all or part of the alternatives in decreasing preference. In all these situations, it is commonly assumed that respondents only have strict preferences among all the alternatives as respondents can only give a single best choice, a single worst choice, or a ranking without ties. In this paper, we propose a general rank-ordered model, which is able to deal with all types of ranking data, including complete and incomplete rankings, with and without ties. We conduct a simulation study to check the performance of the general rank-ordered logit model in case the responses are either full rankings with ties, multiple best choices, or multiple best and worst choices, respectively. In each scenario, we compare the performance of the proposed model with that of the classical model on the corresponding converted data without ties which are obtained by randomly ordering the tied rankings. The results of the simulation study show that the proposed model can recover the preference parameters correctly. Furthermore, the results illustrate that modeling possible ties instead of forcing respondents to choose between tied alternatives, results in more accurate estimates of the preference parameters and of the marginal rates of substitution.

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