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A Random Utility Model of Subset Choices: New Theory and Applications

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The "Subset Choice" paradigm denotes a situation in which a sample of decision makers is offered the same set of choice alternatives and asked to each choose a subset of any size. Building on a "Random Utility Model for Approval Voting" from Falmagne and Regenwetter (1994), several new theoretical results as well as the analysis of 30 approval votes are reported. The main theoretical results are a more detailed analysis of the basic assumptions showing that an independence axiom in the original paper was stronger than necessary, two new but equivalent formulations of the "size-independent model" of subset choices, a representation and uniqueness theorem for the case of three choice alternatives, a brief study of the stability of the model under substructures, and various parametrizations of the general model. The model exhibits good overall performance on the voting data and gives a detailed description of the voters' support for the candidates in form of a table - denoting the marginal probability of each candidate i being ranked at position k in the individual voters' preferences.