Monotone Additive Statistics*

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Abstract
The expectation is an example of a descriptive statistic that is monotone with respect to stochastic dominance, and additive for sums of independent random variables. We provide a complete characterization of such statistics, and explore a number of applications to models of individual and group decision-making. These include a representation of stationary, monotone time preferences, extending the work of Fishburn and Rubinstein (1982) to time lotteries, as well as a characterization of risk-averse preferences over monetary gambles that are invariant to mean-zero background risks.