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Realizable monotonicity and inverse probability transform. (English) Zbl 1139.60304

Cuadras, Carles M. (ed.) et al., Distributions with given marginals and statistical modelling. Papers presented at the meeting, Barcelona, Spain, July 17–20, 2000. Dordrecht: Kluwer Academic Publishers (ISBN 1-4020-0914-3/hbk). 63-71 (2002).

A system $(P_\alpha : \alpha \in A)$ of probability measures on a common state space S indexed by another index set A can be "realized" by a system $(X_\alpha : \alpha \in A)$ of S -valued random variables on some probability space in such a way that each X_α is distributed as P_α . Assuming that A is a lattice, $(X_\alpha : \alpha \in A)$ can be realized by a system $(X_\alpha : \alpha \in A)$ with the monotonicity property that $X_\alpha \leq X_\beta$ almost surely whenever $\alpha \leq \beta$. When such a realization is possible, we call the system $(P_\alpha : \alpha \in A)$ "realizably monotone." Such a system necessarily is stochastically monotone in stochastic ordering whenever $\alpha \leq \beta$. In general, stochastic monotonicity is not sufficient for realizable monotonicity. For $(P_\alpha : \alpha \in A)$ realizing the monotonicity of a stochastically monotone system when the two notions of monotonicity are equivalent.

For the entire collection see [\[Zbl 1054.62002\]](#).

MSC:

60E15 Inequalities; stochastic orderings

Cited in 1 Document