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# Sufficient conditions for some stochastic orders of discrete random variables with applications in reliability

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**SUMMARY**

In this paper we focus on providing sufficient conditions for some well-known stochastic orders in reliability but dealing with the discrete versions of them, filling a gap in the literature since there is just one paper on this topic. In particular, we find conditions based on the unimodality of the ratio of the mass probability functions for the comparison on some stochastic orders of two discrete random variables. These results have interest in comparing discrete random variables because the sufficient conditions are easy to check when there are no closed expressions for the survival functions, which occurs in many cases. In addition, the results are applied to compare several parametric families of discrete distributions.

**Keywords:** Stochastic orders, Discrete distributions, Unimodality, Panjer, generalized Poisson.

**AMS Classification:** 60E05, 60E15

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