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TESTING FOR INCREASING CONVEX ORDER IN SEVERAL POPULATIONS

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Abstract. Increasing convex order is one of important stochastic orderings. It is very often used in queueing theory, reliability, operations research and economics. This paper is devoted to studying the likelihood ratio test for increasing convex order in several populations against an unrestricted alternative. We derive the null asymptotic distribution of the likelihood ratio test statistic, which is precisely the chi-bar-squared distribution. The methodology for computing critical values for the test is also discussed. The test is applied to an example involving data for survival time for carcinoma of the oropharynx.

Key words and phrases: Increasing convex order, chi-bar-squared distribution, likelihood ratio test, asymptotic distribution.

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