

ON THE TESTING OF MARGINAL HOMOGENEITY WITH A ONE-SIDED ALTERNATIVE IN THE ANALYSIS OF VARIANCE

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Abstract. We consider a two-factor experiment in which the factors have the same levels with a natural ordering among the levels. Likelihood ratio tests for testing equality of the main effects with a one-sided alternative and for testing the one-sided hypothesis as a null hypothesis are studied. Closed form expressions for the maximum likelihood estimates under the various hypotheses are obtained. The null hypothesis distributions for these test statistics are derived.

Key words and phrases: Chi-bar-squared distributions, convex duality, isotonic regression, likelihood ratio tests, one-sided hypotheses, order restricted inference, two-factor designs.