MULTIPLE CONTRAST TESTS FOR PROPORTIONS

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Abstract

Many proposals for order restricted tests for proportions are available. Here a so-called multiple contrast test will be discussed which is sensitive to any shape of dose-response relationship and able to decide on both global and local alternatives.

Generally, one-sided trend tests seem to be trivial: a likelihood ratio test (LRT) exists, many references are available and the Cochran-Armitage test represents the gold standard in publications. But for the LRT is the distribution under the null- and alternative hypothesis only available for special designs, and the CA-test is sensitive only for near-linear shapes. Linearity is a rather restrictive a-priori assumption. Moreover, the shape is not an assumption; it is an outcome of the study. One solution represents the multiple contrast test according to Bretz and Hothorn (2002). For each elementary alternative an optimal contrast test will be used, the maximum of these contrasts represents a global test which follows a multivariate normal distribution with a non-product moment correlation matrix. Herby, the maximum elementary contrast represents the most likely shape. Particularly for the change-point alternative a global test sensitive for all change points, the asymptotic distribution under both null- and alternative and the estimation of the most likely change point are possible.

This approach will be discussed by means of real data from a clinical dose-finding study Phase IIb/III using and R-package.
References:
