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Defect of the size of nonrandomized test and randomization effect on decreasing of the necessary sample size in testing the bernoulli success probability

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Abstract

© 2015 Society for Industrial and Applied Mathematics. Several problems of testing the Bernoulli success probability are considered. The upper asymptotic (n → ∞) bound for power defect of nonrandomized test is established. The difference between necessary samples sizes of the most powerful (randomized) test and the most powerful test in the class of nonrandomized tests is asymptotically estimated. Three known formulas for the necessary sample size are numerically compared. Modifications of these formulas are proposed to obtain better precision.

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Keywords

Asymptotics of a necessary sample size, Binomial distribution, Close hypotheses, Defect of the size of a nonrandomized test, Kornish–Fisher expansion, Randomization effect