

國立高雄大學統計學研究所  
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題目：How Conservative Is Fisher's Exact Test ? A Quantitative  
Evaluation of the Two-Sample Comparative Binomial Trial

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摘要：

The debate as to which statistical methodology is most appropriate for the analysis of two-sample comparative binomial trial has persisted for decades. Practitioners who favor the conditional methods of Fisher, Fisher's exact test (FET), claim that only experimental outcomes containing the same amount of information should be considered when performing analyses. Hence, the total number of successes should be fixed at its observed level in hypothetical repetitions of the experiment. Up to 2008, the actual significance level attained by FET (the size of the test) has not been reported in the statistical literature. Gerald G. Grans and Jonathan J. Shuster (Statistic in medicine, 2008;27:3598-3611) develop a numerical algorithm that calculate the test size of FET for the nominal two-sided significance level 0.05 and demonstrate that FET remains conservative even for sample sizes up to 125 per group. Additionally, it propose an adjustment method to improve the test size making FET less conservative and more powerful. It is noteworthy that a two sample binomial test (TBT) is more appropriate in these cases. However, it may because of the calculation of TBT is time consuming, researchers consider FET rather than TBT if necessary. In this work, we derive p-value tables of both TBT and FET in several chosen sample size, so that the computing time problem can be solved in applications. On the other hand, through the comparison of the p-values under different possible outcomes, we can understand whether FET and TBT may give opposite decision.

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