

Improved estimation of accuracy in simple hypothesis versus simple alternative testing

Hsiuying Wang
Institute of Statistical Science
Academia Sinica
Taipei 115, Taiwan

In the hypothesis testing problem, a most common used evidence against the null hypothesis is the p value. Although there have been many Bayesian criticisms leveled at p-value, Hwang, Casella, Robert, Wells and Farrell (1992) show the adequacy of using p-value as evidence against the null hypothesis by considering testing as an estimation problem. However, when the parameter space is not the natural space, Woodroffe and Wang (2000) show that the usual p-value derived by the N-P test is not appropriate to be the evidence against the null hypothesis for the Poisson distribution in the terminology of Hwang, Casella, Robert, Wells and Farrell (1992) paper and provide a modified p-value. Although this modified p-value is admissible, it is not the admissible estimator which can dominate the usual p-value. In this paper, we concentrate on the simple hypothesis versus simple alternative hypothesis testing problem. Admissible estimators which dominate the usual p-value are provided.

References

- [1] Hwang, J. T., Casella, G., Robert, C., Wells, M. and Farrell, R. (1992). Estimation of accuracy in testing. *Ann. Statist.* 20 490-509.
- [2] Schaarfsma, W., Tobloom, J. and Van dre Menlen, B. (1989). Discussing truth or falsity by computing a q-value. In *Statistical Data Analysis and Inference* (Y. Dodge, ed.) 85-100. North-Holland, Amsterdam.
- [3] Woodroffe, M. and Wang, H. (2000). The problem of low counts in a signal plus noise model. To appear in the *Annals of Statistics*.