

Asymptotic Distribution of the Conditional Regret Risk for Selecting Good Exponential Populations.

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Abstract: In this paper empirical Bayes methods are applied to construct selection rules for the selection of all good exponential distributions. We modify the selection rule introduced and studied by Gupta and Liang [10] who proved that the regret risk converges to zero with rate $O(n^{-\lambda/2})$, $0 < \lambda \leq 2$. The aim of this paper is to study the asymptotic behavior of the conditional regret risk \mathcal{R}_n . It is shown that $n\mathcal{R}_n$ tends in distribution to a linear combination of independent χ^2 -distributed random variables. As an application we give a large sample approximation for the probability that the conditional regret risk exceeds the Bayes risk by a given $\varepsilon > 0$. This probability characterizes the information contained in the historical data.

Keywords:

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