ON SUBSET SELECTION UNDER ORDER RESTRICTIONS

Constance van Eeden

ABSTRACT

Suppose, on the basis of independent samples $X_{i,1}, \ldots, X_{i,n_i}$ from k populations $\pi_1, \ldots, \pi_k$, one wants to select a subset of $\{\pi_1, \ldots, \pi_k\}$ which contains, with high probability, all those π_i which are "better than a standard". For $X_{i,j} \sim \mathcal{N}(\theta_i, 1)$, $i = 1, \ldots, k$, e.g., one might be interested in those π_i for which $\theta_i \geq 0$. Solutions to such problems are well-known for many cases.

Now suppose, in this normal-mean case, that one knows that $\theta_1 \leq \ldots \leq \theta_k$. Question: how could one use this information to construct a "better" procedure? S.S. Gupta and H-M. Yang (1981) develop two such "better" procedures for the normal-mean case and study their properties by simulation. Paul van der Laan and myself have similar procedures for the case where $X_{i,j}$, $j = 1, \ldots, n$, are $\mathcal{U}(0, \theta_i)$, $i = 1, \ldots, k$. In our case, "π_i is better than a standard" means $\theta_i \geq \eta_o$ for a given constant $\eta_o > 0$. We have some analytical results for various criteria of the "goodness" of a procedure.