# A MULTIPLE CRITERIA OPTIMAL SELECTION PROBLEM

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For each $m \geq 2$ and for stopping rules, $\tau$,

$$E\min_{\tau \leq n} \sum_{j=1}^{m} X_\tau^{(j)} \approx n^{1-1/m}[(m+1)!/m]^{1/m}$$

if either the $X_i^{(j)}$'s are i.i.d., uniform on $(0,n)$; or $\{X_i^{(1)}\},\ldots,\{X_i^{(m)}\}$ are m independent random permutations of 1 to n and the $\tau$'s are based only on relative ranks. This equivalence fails when m=1.

## 1. Introduction.

Chow et al (1964) solved an optimal stopping problem which Lindley (1961) had earlier considered. Lindley tried an approximation which (as he himself noted) was not successful. This article presents an extension of that problem, in which Lindley's approximation does succeed, as well as an extreme value problem for sampling without replacement which is a companion to the optimal stopping problem.

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