Ann. Inst. Statist. Math.
Vol. 41, No. 1, 121–138 (1989)

STOPPING RULES, PERMUTATION INVARIANCE AND SUFFICIENCY PRINCIPLE*

NITIS MUKHOPADHYAY[1], PRANAB KUMAR SEN[2] AND BIKAS KUMAR SINHA[3]

[1]*Department of Statistics, Box U-120, 196 Auditorium Road, The University of Connecticut, Storrs, CT 06269, U.S.A.*
[2]*Department of Biostatistics, University of North Carolina, Chapel Hill, NC 27599, U.S.A.*
[3]*Division of Theoretical Statistics and Mathematics, Indian Statistical Institute, 203 B. T. Road, Calcutta 700035, India*

(Received December 16, 1987; revised July 28, 1988)

Abstract. In the context of sequential (point as well as interval) estimation, a general formulation of permutation-invariant stopping rules is considered. These stopping rules lead to savings in the ASN at the cost of some elevation of the associated risk—a phenomenon which may be attributed to the violation of the sufficiency principle. For the (point and interval) sequential estimation of the mean of a normal distribution, it is shown that such permutation-invariant stopping rules may lead to a substantial saving in the ASN with only a small increase in the associated risk.

Key words and phrases: Permutation-invariant stopping rules, average sample numbers, percentage savings, sequential point estimation, fixed-width confidence interval, normal mean, unknown variance.