

# Minimum Cost Single and Double Screening Procedures with Dichotomous Performance Variable

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## *Abstract*

Minimum cost single and double screening procedures are presented based on two screening variables ( $X_1, X_2$ ) as a substitute for one dichotomous performance variable  $T$ (conforming/nonconforming). It is assumed that  $X_1$  and  $X_2$  are highly correlated with  $T$  and relatively inexpensive to measure compared to  $T$ . It is also assumed that  $X_1$  and  $X_2$  given  $T$  are normally distributed. Two screening variables are observed simultaneously in the single screening procedure and sequentially in the double screening procedure. Cost models are constructed which involve the two screening inspection costs and costs of misclassification errors. Methods of finding the optimal cutoff values of the screening variables are presented. An illustrative example is given and numerical studies are performed to compare the proposed screening procedures based on two screening variables with the screening procedures based on one screening variable.