E - 23

POOLING PRIOR DISTRIBUTIONS

S. Weerahandi *and* **J. V. Zidek**
(*Department of Mathematics, Sri Jayawardenapura University, Nugegoda*)

A contribution is made to the problem of combining the prior density functions, $\Pi_1 \ldots \Pi_n$, of n individuals. The rule which is obtained asserts that it is the geometric mean of the densities with respect to unspecified weights $p_1 \ldots p_n$ that is appropriate, i.e., $\Pi = \Pi_1^{P_1} \ldots \Pi_n^{P_n}$ rather than the frequently chosen arithemetic mean, i.e., weighted average of the Π_i. It is further argued that randomised decision rules need to be introduced because in some cases the prior opinions represented by the Π_i are so discrepant that "tossing a coin" is the only satisfactory means for choosing between them. The domain of Π is extended appropriately. An illustrative application is given in which the prior distributions are normal.