

Selecting the Best Population under Multiple Criteria: An Empirical Bayes Approach

Wen-Tao Huang

Tamkang University

R.O.C.

Yao-Tsung Lai

Aletheia University

R.O.C.

Abstract

Consider $k (k \geq 2)$ populations whose mean θ_i and variance σ_i^2 are all unknown. For given control values θ_0 , σ_0^2 and δ_0 , we are interested in selecting some population whose mean is most closed to θ_0 in the qualified subset in which each mean is no further than δ_0 from θ_0 and whose variance is less than or equal to σ_0^2 . In this paper we focus on the normal populations taking normal distribution as its conjugate prior. However, the analogous method can be applied for the cases other than normal. A Bayes approach is set up and an empirical Bayes procedure is proposed which has been shown to be asymptotically optimal.

Keywords: Best Population, Multiple Criteria, Asymptotic Optimality, Empirical Bayes Rule.