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INTERVAL ESTIMATION OF THE OVERLAP COEFFICIENT OF TWO NORMAL DISTRIBUTIONS

SIBIL JOSE

Department of Statistics St. George's College Aruvithura Kottayam, Kerala, India **e-mail:** sibiljose60@yahoo.com

AND

SEEMON THOMAS

Department of Statistics St. Thomas College Pala Kottayam, Kerala, India

e-mail: seemonpala@rediffmail.com

Abstract

Matusita's measure of overlap is considered for two normal distributions, without assuming equal variances, and a confidence interval is proposed using the generalized pivotal quantity approach. Simulation results show that the proposed method provides better coverage than bootstrap methods.

Keywords: coverage probability, bootstrap t, generalized pivotal quantity, Matusita's measure of overlap, percentile bootstrap.

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References

- G.M. Cox and W.P. Martin, Use of discriminant function for differentiating soils withdifferent Azetobactor populations, Journal paper No. J 451 of the Iowa aricultural experiment station, Ames USA (1937).
- [2] H.F. Inman and E.L.Bradley, Hypothesis tests and confidence interval estimates for the overlap of two normal distribution with equal variances, Environmetrics 5 (1994) 167–189.
- [3] K. Krishnamoorthy and T. Mathew, Assessing Occupational exposure via the one way random effects model with balanced data, Journal of Agricultural Biological and Environmental Statistics 4 (2002) 440–457.

- [4] K. Krishnamoorthy and T. Mathew, Inferences on the means of log normal distributions using generalized p-values and generalized confidence intervals, Journal of Statistical Planning and Inference 115 (2003) 103–121.
- [5] K. Matusita, Decision rules based on the distance for problem of fit, two samples, and estimation, The Annals of Mathematical Statistics **26** (1955) 631–640.
- [6] M. Minami and K. Shimizu, Estimation of similarity measure for multivariate normal distributions, Environmetal and Ecological Statistics 6 (1999) 229–248.
- [7] M.S. Mulekar and S.N. Mishra, Confidence interval estimation of the overlap: equal means case, Computational Statistics and Data Analysis 34 (2000) 121–137.
- [8] A. Roy and T. Mathew, A generalized confidence limit for the reliability function of a two parameter exponential distribution, Jornal of Statistical Planning and Inference 128 (2) (2005) 509–17.
- [9] S. Weerahandi, *Generalized Confidence Intervals*, Journal of the American Statistical Association 88 (1993) 899–905.
- [10] S. Weerahandi, Exact statistical methods for data analysis (New York, Springer series in Statistics, 1994).
- [11] S. Weerahandi, Generalized inference in repeated measures (New Jersey, Wiley series in probability and statistics, 2004).

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