Robustness in the multivariate Gaussian distribution

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Abstract

In this paper the methods developed by Magnus [1] are used to derive robust estimators of the variance of the estimated covarince matrix in a multivariate Gaussian distribution. In addition the profile likelihood for the correlation coefficient and partial correlation coefficients are derived. Using the methods developed by Royall and Tsou [2] robust versions of these likelihoods are developed.

Keywords

Robustness, multivariate Gaussian distribution, profile likelihood.

References

[1] Magnus, Jan R (1988) *Linear Structures* Griffin, London

[2] Royall, R.M. and Tsou, T.S. (2003). Interpreting statistical evidence by using imperfect models: robust adjusted likelihood functions. *Journal of the Royal Statistical Society: Series B (Statistical Methodology)(65)*, 391–404.

[3] Royall, R.M. (1986). Model robust confidence intervals using maximum likelihood estimators. *International Statistical Review/Revue Internationale de Statistique.*, 221–226.