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Fonte Colina Verde

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Dados do Trabalho

Título

SAMPLE SIZE CALCULATION USING DECISION THEORY

Resumo

Decision Theory and Bayesian Inference have an important role to solve some common problems in research and practice in the medical field. These decisions may be from different natures and can consider several factors, such as the costs to carry out the study and each sample unit and, especially, the risks for the patients involved. Here, the estimation of sample size calculation considers the cost of sampling units and clinically relevant size of credible interval for difference between groups. By fixing a probability to the HPD region, the Bayes' Risk is calculated for each sample size possible and it is chosen the optimal sample size, which minimizes the risk. In addition, a second solution is presented by setting the amplitude of the credible interval, leaving its probability free. It is considered a Normal distribution for data with unknown mean and fixed variance (Normal prior) and also the case where both mean and variance are unknown (Normal-Inverse Gamma prior). It is presented a solution considering the statistical distribution of sufficient statistics. In scenarios with no analytical solutions, the optimal sample sizes are presented using Monte Carlo methods.

Palavras-chave

decision theory, bayesian statistics, monte carlo, sample size.

Área

Inferência Bayesiana

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FECHAR

↑ (JAVASCRIPT:VOID(0))

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