

Estimation for Binomial Proportions from Pooled Samples Using an Objective Prior

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Group testing has been used in many fields of study, as individual testing can be too time consuming and pooled testing is more cost-effective. Group testing is where units are pooled together and tested as a group rather than individually. In this paper we will look into confidence intervals for linear functions of binomial proportions from pooled samples. We will investigate the performance of Bayesian confidence (credibility) intervals for a single proportion as well as the difference of two binomial proportions estimated from pooled samples. An objective (non-informative) prior, the Jeffreys prior, will be used. Results from the Bayesian method will be compared to results from some known classical methods. These intervals will be compared with each other in terms of coverage, left non-coverage, right non-coverage, symmetry and interval length.

Key Words: Bayesian inference, coverage, credibility interval, Jeffreys prior