



Optimal inference via confidence distributions for two-by-two tables modelled as Poisson pairs: fixed and random effects

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This paper presents methods for meta-analysis of 2×2 tables, both with and without allowing heterogeneity in the treatment effects. Meta-analysis is common in medical research, but most existing methods are unsuited for 2×2 tables with rare events. Usually the tables are modelled as pairs of binomial variables, but we will model them as Poisson pairs. The methods presented here are based on confidence distributions, and offer optimal inference for the treatment effect parameter. We also propose an optimal method for inference on the ratio between treatment effects, and illustrate our methods on a real dataset.

Keywords: combining information; meta-analysis; rare events