

The Bayes factor for inequality and about equality constrained models

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Abstract

The Bayes factor is a useful tool for evaluating sets of inequality and about equality constrained hypotheses. In the approach described, the Bayes factor for a constrained model with the encompassing model reduces to the ratio of two proportions, namely the proportion of, respectively, the encompassing prior and posterior in agreement with the constraints. This enables easy and straightforward estimation of the Bayes factor for inequality constrained hypotheses. For (about) equality constraints a modification of the approach is proposed.

In this set-up, the issue of sensitivity to model specific prior distributions reduces to sensitivity to one prior distribution, that is, the prior for the encompassing model. It is shown that for specific classes of inequality constrained models, the Bayes factors for the constrained with the unconstrained model is virtually independent of the encompassing prior, that is, model selection is virtually objective. This is however not the case for (about) equality constraints.

An illustration is provided, where -in the context of psychological research- informative hypotheses are formulated by imposing (in)equality constraints on means.

References:

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