Objective Predictive Distributions

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Objective Bayesian analysis requires the use of a prior distribution which only depends on the assumed model and the quantity of interest. *Reference analysis* (Bernardo [*J. Roy. Statist. Soc. Ser. B* 41 (1979):113–147]; Berger and Bernardo [*Bayesian Statistics 4* (Bernardo *et al.* eds.) Oxford University Press: 35–60] provides a general solution when the quantity of interest is a function of the parameters in the model, but it is not obvious how to proceed when the quantity of interest is some function of future observations. In this paper we explore the derivation of reference priors which are appropriate for prediction. A number of examples are used to illustrate that the solutions proposed have appropriate frequentist coverage properties.

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