

Bayesian model selection for a linear model with grouped covariates

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Abstract Model selection for normal linear regression models with grouped covariates is considered under a class of Zellner's g -priors. The marginal likelihood function is derived under the proposed priors, and a simplified closed-form expression is given assuming the commutativity of the projection matrices from the design matrices. As illustration, the marginal likelihood functions of the balanced q -way ANOVA models, either solely with main effects or with all interaction effects, are calculated using the closed-form expression. The performance of the proposed priors in model comparison problems is demonstrated by simulation studies on two-way ANOVA models and by two real data studies.

Keywords ANOVA models · Bayes factor · Consistency · Marginal likelihood · Zellner's g -prior

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