

**bayestest** — Bayesian hypothesis testing

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## Description

`bayestest` provides two types of Bayesian hypothesis testing, interval hypothesis testing and model hypothesis testing, using current Bayesian estimation results.

`bayestest interval` performs interval hypothesis tests for model parameters and functions of model parameters; see [\[BAYES\] bayestest interval](#).

`bayestest model` tests hypotheses about models by computing posterior probabilities of the models; see [\[BAYES\] bayestest model](#).

## Remarks and examples

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Bayesian hypothesis testing is fundamentally different from the conventional frequentist hypothesis testing using  $p$ -values. Frequentist hypothesis testing is based on the deterministic decision of whether to reject a null hypothesis against an alternative hypothesis based on the obtained  $p$ -value. Bayesian hypothesis testing is built upon a probabilistic formulation for a parameter of interest. For example, it can provide a probabilistic summary of how likely that parameter of interest belongs to some prespecified set of values. Also, Bayesian testing can assign a probability to a hypothesis of interest or model of interest given the observed data. This cannot be done in the frequentist testing. The ability to assign a probability to a hypothesis often provides a more natural interpretation of the results. For example, Bayesian hypothesis testing provides a direct answer to the following questions. How likely is it that the mean height of males is larger than six feet? What is the probability that a person is guilty versus being innocent? How likely is one model over the other model? Frequentist hypothesis testing cannot be used to answer these questions.

We consider two forms of Bayesian hypothesis testing: interval hypothesis testing and what we call model hypothesis testing.

The goal of interval hypothesis testing is to estimate the probability that a model parameter lies in a certain interval; see [\[BAYES\] bayestest interval](#) for details.

The goal of model hypothesis testing is to test hypotheses about models by computing probabilities of the specified models given the observed data; see [\[BAYES\] bayestest model](#) for details.

## Also see

[\[BAYES\] bayestest interval](#) — Interval hypothesis testing

[\[BAYES\] bayestest model](#) — Hypothesis testing using model posterior probabilities

[\[BAYES\] bayesian postestimation](#) — Postestimation tools for bayesmh and the bayes prefix