New in

NEW IN BAYESIAN ANALYSIS:
Multiple chains, predictions, & more

- Multiple chains
- Gelman–Rubin convergence diagnostics
- Bayesian predictions
- Posterior summaries of simulated values
- MCMC replicates
- Posterior predictive p-values

Multiple chains

Use new option `nchains()` with `bayes:` or `bayesmh` to simulate multiple chains.

Fit regression of $y$ on covariates $x_1$ through $x_{10}$ and generate 3 chains.

Check Gelman–Rubin convergence diagnostics

Explore convergence visually for coefficient of $x_6$
Bayesian predictions

- Predict new values
- Check model fit using posterior predictive checks
- Compute functions of predicted values
- Specify your own prediction functions
- Obtain posterior summaries of predicted values
- Generate MCMC replicates
- Compute posterior predictive p-values

Bayesian predictions are outcome values simulated from the posterior predictive distribution. They are useful for predicting new outcome values and for checking model fit. Let’s use `bayesmh` to fit a general Bayesian model:

```
.bayesmh y ...
```

**Posterior summaries of predictions**

Compute posterior mean and credible intervals for all observations, and store them in variables `pmean`, `cril`, and `criu`.

```
.bayespredict pmean, mean
.bayespredict cril criu, cri
```

**MCMC replicates**

Compute 6 MCMC replicates, and store them in variables `yrep1`, `yrep2`, and so on.

```
.bayesreps yrep*, nreps(6)
```

List the first 10 observations

**Posterior predictive p-values**

Simulate predictions for outcome `y`, and save them in `y_pred.dta`.

```
.bayespredict {_ysim}, saving(y_pred)
```

Compute posterior predictive p-values; use Mata’s built-in functions and your own.

**Perform analyses using GUI**

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