**Title**

bayes: truncreg — Bayesian truncated regression

**Description**

{\texttt{bayes: truncreg}} fits a Bayesian truncated linear regression to a continuous outcome; see [BAYES] \texttt{bayes} and [R] \texttt{truncreg} for details.

**Quick start**

Bayesian truncated linear regression of y on x1 and x2, using a lower truncation limit of 17 and using default normal priors for regression coefficients and default inverse-gamma prior for the variance

{\texttt{bayes: truncreg y x1 x2, ll(17)}}

Use a standard deviation of 10 instead of 100 for the default normal priors

{\texttt{bayes, normalprior(10): truncreg y x1 x2, ll(17)}}

Use a shape of 1 and a scale of 2 instead of values of 0.01 for the default inverse-gamma prior

{\texttt{bayes, igammaprior(1 2): truncreg y x1 x2, ll(17)}}

Use uniform priors for the slopes and a normal prior for the intercept

{\texttt{bayes, prior({y: x1 x2}, uniform(-10,10)) ///}}

{\texttt{prior({y: _cons}, normal(0,10)): truncreg y x1 x2, ll(17)}}

Save simulation results to \texttt{simdata.dta}, and use a random-number seed for reproducibility

{\texttt{bayes, saving(simdata) rseed(123): ///}}

{\texttt{truncreg y x1 x2, ll(17)}}

Specify 20,000 MCMC samples, set length of the burn-in period to 5,000, and request that a dot be displayed every 500 simulations

{\texttt{bayes, mcmcsize(20000) burnin(5000) dots(500): ///}}

{\texttt{truncreg y x1 x2, ll(17)}}

In the above, request that the 90\% HPD credible interval be displayed instead of the default 95\% equal-tailed credible interval

{\texttt{bayes, clevel(90) hpd}}

Also see \texttt{Quick start} in [BAYES] \texttt{bayes} and \texttt{Quick start} in [R] \texttt{truncreg}.

**Menu**

Statistics > Linear models and related > Bayesian regression > Truncated regression
Syntax

```plaintext
bayes [ , bayesopts ] : truncreg depvar [ indepvars ] [ if ] [ in ] [ weight ] [ , options ]
```

**options**

<table>
<thead>
<tr>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Model</strong></td>
</tr>
<tr>
<td>noconstant</td>
</tr>
<tr>
<td>ll(varname</td>
</tr>
<tr>
<td>ul(varname</td>
</tr>
<tr>
<td>offset(varname)</td>
</tr>
<tr>
<td><strong>Reporting</strong></td>
</tr>
<tr>
<td>display_options</td>
</tr>
<tr>
<td>level(#)</td>
</tr>
</tbody>
</table>

**indepvars** may contain factor variables; see [U] 11.4.3 Factor variables.

depvar and indepvars may contain time-series operators; see [U] 11.4.4 Time-series varlists.
fweights are allowed; see [U] 11.1.6 weight.
bayes: truncreg, level() is equivalent to bayes, clevel(): truncreg.
For a detailed description of options, see Options in [R] truncreg.

**bayesopts**

<table>
<thead>
<tr>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Priors</strong></td>
</tr>
<tr>
<td>*normalprior(#)</td>
</tr>
<tr>
<td>*igammaprior( # #)</td>
</tr>
<tr>
<td>prior(priorspec)</td>
</tr>
<tr>
<td>dryrun</td>
</tr>
<tr>
<td><strong>Simulation</strong></td>
</tr>
<tr>
<td>nchains(#)</td>
</tr>
<tr>
<td>mcmcsize(#)</td>
</tr>
<tr>
<td>burnin(#)</td>
</tr>
<tr>
<td>thinning(#)</td>
</tr>
<tr>
<td>rseed(#)</td>
</tr>
<tr>
<td>exclude(paramref)</td>
</tr>
<tr>
<td><strong>Blocking</strong></td>
</tr>
<tr>
<td>*blocksize(#)</td>
</tr>
<tr>
<td>block(paramref[ , blockopts ])</td>
</tr>
<tr>
<td>blocksummary</td>
</tr>
<tr>
<td>*noblocking</td>
</tr>
</tbody>
</table>
Initialization

*initial*(initspec) specify initial values for model parameters with a single chain
init#(initspec) specify initial values for #th chain; requires nchains()
nomleinitial suppress the use of maximum likelihood estimates as starting values
*initall*(initspec) specify initial values for all chains; requires nchains()
*initrandom* specify random initial values
*initsummary* display initial values used for simulation
*noisily* display output from the estimation command during initialization

Adaptation

*adaptation*(adaptopts) control the adaptive MCMC procedure
*scale(#)* initial multiplier for scale factor; default is scale(2.38)
*covariance(cov)* initial proposal covariance; default is the identity matrix

Reporting

clevel(#)* set credible interval level; default is clevel(95)
hpd display HPD credible intervals instead of the default equal-tailed credible intervals
*eform*[ (string) ] report exponentiated coefficients and, optionally, label as string
*batch(#)* specify length of block for batch-means calculations; default is batch(0)
*saving*(filename[, replace]) save simulation results to filename.dta
*nomodelsummary* suppress model summary
*chainsdetail* display detailed simulation summary for each chain
*no* dots suppress dots or display dots every 100 iterations and iteration numbers every 1,000 iterations; default is nodots
dots(#[, every(#)]) display dots as simulation is performed
*no* show(paramref) specify model parameters to be excluded from or included in the output
*notable* suppress estimation table
*noheader* suppress output header
title(string) display string as title above the table of parameter estimates
display_options control spacing, line width, and base and empty cells

Advanced

*search_options* control the search for feasible initial values
corrlag(#) specify maximum autocorrelation lag; default varies
corrtol(#) specify autocorrelation tolerance; default is corrtol(0.01)

*Starred options are specific to the bayes prefix; other options are common between bayes and bayesmh.

Options prior() and block() may be repeated.
priorspec and paramref are defined in [BAYES] bayesmh.
paramref may contain factor variables; see [U] 11.4.3 Factor variables.

See [U] 20 Estimation and postestimation commands for more capabilities of estimation commands.

Model parameters are regression coefficients {depvar:indepvars} and variance {sigma2}. Use the dryrun option to see the definitions of model parameters prior to estimation.

For a detailed description of bayesopts, see Options in [BAYES] bayes.
Remarks and examples

For a general introduction to Bayesian analysis, see [BAYES] Intro. For a general introduction to Bayesian estimation using an adaptive Metropolis–Hastings algorithm, see [BAYES] bayesmh. For remarks and examples specific to the bayes prefix, see [BAYES] bayes. For details about the estimation command, see [R] truncreg.

For a simple example of the bayes prefix, see Introductory example in [BAYES] bayes.

Stored results

See Stored results in [BAYES] bayes.

Methods and formulas

See Methods and formulas in [BAYES] bayesmh.

Also see

[BAYES] bayes — Bayesian regression models using the bayes prefix
[R] truncreg — Truncated regression
[BAYES] Bayesian postestimation — Postestimation tools for bayesmh and the bayes prefix
[BAYES] Bayesian estimation — Bayesian estimation commands
[BAYES] Bayesian commands — Introduction to commands for Bayesian analysis
[BAYES] Intro — Introduction to Bayesian analysis
[BAYES] Glossary