Title

bayes: ologit — Bayesian ordered logistic regression

Description

bayes: ologit fits a Bayesian ordered logistic regression to an ordinal outcome; see [BAYES] **bayes** and [R] **ologit** for details.

Quick start

Bayesian ordered logistic regression of y on x1 and x2, using default normal priors for regression coefficients and flat priors for cutpoints

    bayes: ologit y x1 x2

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

    bayes, normalprior(10): ologit y x1 x2

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

    bayes, prior({y: x1 x2}, uniform(-10,10)) ///
       prior({y:_cons}, normal(0,10)): ologit y x1 x2

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

    bayes, saving(simdata) rseed(123): ologit y x1 x2

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

    bayes, mcmcsize(20000) burnin(5000) dots(500): ologit y x1 x2

In the above, request that the 90% highest posterior density (HPD) credible interval be displayed instead of the default 95% equal-tailed credible interval

    bayes, clevel(90) hpd

Display odds ratios instead of coefficients

    bayes: ologit y x1 x2, or

Display odds ratios on replay

    bayes, or

Also see *Quick start* in [BAYES] **bayes** and *Quick start* in [R] **ologit**.

Menu

Statistics > Ordinal outcomes > Bayesian regression > Ordered logistic regression

Syntax

> bayes [, *bayesopts*] : ologit *depvar* [*indepvars*] [*if*] [*in*] [*weight*] [, *options*]

options	Description
Model	
<u>off</u>set(*varname*)	include *varname* in model with coefficient constrained to 1
Reporting	
or	report odds ratios
display_options	control spacing, line width, and base and empty cells
level(*#*)	set credible level; default is level(95)

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: ologit, level() is equivalent to bayes, clevel(): ologit.

For a detailed description of *options*, see *Options* in [R] **ologit**.

bayesopts	Description
Priors	
* <u>normalprior</u>(*#*)	specify standard deviation of default normal priors for regression coefficients; default is normalprior(100)
prior(*priorspec*)	prior for model parameters; this option may be repeated
dryrun	show model summary without estimation
Simulation	
nchains(*#*)	number of chains; default is to simulate one chain
mcmcsize(*#*)	MCMC sample size; default is mcmcsize(10000)
<u>burnin</u>(*#*)	burn-in period; default is burnin(2500)
<u>thinning</u>(*#*)	thinning interval; default is thinning(1)
rseed(*#*)	random-number seed
<u>exclude</u>(*paramref*)	specify model parameters to be excluded from the simulation results
Blocking	
* blocksize(*#*)	maximum block size; default is blocksize(50)
block(*paramref* [, *blockopts*])	specify a block of model parameters; this option may be repeated
blocksummary	display block summary
* <u>noblocking</u>	do not block parameters by default
Initialization	
initial(*initspec*)	specify initial values for model parameters with a single chain
init#(*initspec*)	specify initial values for #th chain; requires nchains()
initall(*initspec*)	specify initial values for all chains; requires nchains()
nomleinitial	suppress the use of maximum likelihood estimates as starting values
initrandom	specify random initial values
initsummary	display initial values used for simulation
* <u>noisily</u>	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
* or   report odds ratios
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(*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)

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*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**.

collect is allowed; see [U] **11.1.10 Prefix commands**.

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

Model parameters are regression coefficients {*depvar*:*indepvars*} and cutpoints {cut1}, {cut2}, and so on. Use the
    dryrun option to see the definitions of model parameters prior to estimation.

Flat priors, flat, are used by default for cutpoints.

For a detailed description of *bayesopts*, see *Options* in [BAYES] **bayes**.

Remarks and examples   [stata.com](#)

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] **ologit**.

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] **ologit** — Ordered logistic 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**