binreg postestimation — Postestimation tools for binreg

Postestimation commands predict margins References Also see

Postestimation commands

The following postestimation commands are available after `binreg`:

Command	Description
`contrast`	contrasts and ANOVA-style joint tests of parameters
* `estat ic`	Akaike's, consistent Akaike's, corrected Akaike's, and Schwarz's Bayesian information criteria (AIC, CAIC, AICc, and BIC, respectively)
`estat summarize`	summary statistics for the estimation sample
`estat vce`	variance–covariance matrix of the estimators (VCE)
`estimates`	cataloging estimation results
`etable`	table of estimation results
† `forecast`	dynamic forecasts and simulations
`hausman`	Hausman's specification test
`lincom`	point estimates, standard errors, testing, and inference for linear combinations of parameters
`linktest`	link test for model specification
* `lrtest`	likelihood-ratio test
`margins`	marginal means, predictive margins, marginal effects, and average marginal effects
`marginsplot`	graph the results from margins (profile plots, interaction plots, etc.)
`nlcom`	point estimates, standard errors, testing, and inference for nonlinear combinations of parameters
`predict`	predictions, residuals, influence statistics, and other diagnostic measures
`predictnl`	point estimates, standard errors, testing, and inference for generalized predictions
`pwcompare`	pairwise comparisons of parameters
`suest`	seemingly unrelated estimation
`test`	Wald tests of simple and composite linear hypotheses
`testnl`	Wald tests of nonlinear hypotheses

*`estat ic` and `lrtest` are not appropriate after `binreg, irls`.

†`forecast` is not appropriate with `mi` estimation results.

predict

Description for predict

`predict` creates a new variable containing predictions such as expected values, linear predictions, standard errors, residuals, Cook's distance, diagonals, weighted averages, differences, and first derivatives.

Menu for predict

Statistics > Postestimation

Syntax for predict

`predict` [*type*] *newvar* [*if*] [*in*] [, *statistic options*]

statistic	Description
Main	
`mu`	expected value of y; the default
`xb`	linear prediction $\eta = \mathbf{x}\widehat{\boldsymbol{\beta}}$
`eta`	synonym for `xb`
`stdp`	standard error of the linear prediction
`anscombe`	Anscombe (1953) residuals
`cooksd`	Cook's distance
`deviance`	deviance residuals
`hat`	diagonals of the "hat" matrix
`likelihood`	weighted average of the standardized deviance and standard Pearson residuals
`pearson`	Pearson residuals
`response`	differences between the observed and fitted outcomes
`score`	first derivative of the log likelihood with respect to $\mathbf{x}_j\boldsymbol{\beta}$
`working`	working residuals

options	Description
Options	
`nooffset`	modify calculations to ignore the offset variable
`adjusted`	adjust deviance residual to speed up convergence
`standardized`	multiply residual by the factor $(1-h)^{1/2}$
`studentized`	multiply residual by one over the square root of the estimated scale parameter
`modified`	modify denominator of residual to be a reasonable estimate of the variance of *depvar*

These statistics are available both in and out of sample; type `predict ... if e(sample) ...` if wanted only for the estimation sample.

Options for predict

Main

mu, the default, specifies that predict calculate the expected value of y, equal to $g^{-1}(\mathbf{x}\widehat{\boldsymbol{\beta}})$ [$ng^{-1}(\mathbf{x}\widehat{\boldsymbol{\beta}})$ for the binomial family].

xb calculates the linear prediction $\eta = \mathbf{x}\widehat{\boldsymbol{\beta}}$.

eta is a synonym for xb.

stdp calculates the standard error of the linear prediction.

anscombe calculates the Anscombe (1953) residuals to produce residuals that closely follow a normal distribution.

cooksd calculates Cook's distance, which measures the aggregate change in the estimated coefficients when each observation is left out of the estimation.

deviance calculates the deviance residuals, which are recommended by McCullagh and Nelder (1989) and others as having the best properties for examining goodness of fit of a GLM. They are approximately normally distributed if the model is correct and may be plotted against the fitted values or against a covariate to inspect the model's fit. Also see the pearson option below.

hat calculates the diagonals of the "hat" matrix, analogous to linear regression.

likelihood calculates a weighted average of the standardized deviance and standardized Pearson (described below) residuals.

pearson calculates the Pearson residuals, which often have markedly skewed distributions for nonnormal family distributions. Also see the deviance option above.

response calculates the differences between the observed and fitted outcomes.

score calculates the equation-level score, $\partial \ln L/\partial(\mathbf{x}_j\boldsymbol{\beta})$.

working calculates the working residuals, which are response residuals weighted according to the derivative of the link function.

Options

nooffset is relevant only if you specified offset(*varname*) for binreg. It modifies the calculations made by predict so that they ignore the offset variable; the linear prediction is treated as $\mathbf{x}_j\mathbf{b}$ rather than as $\mathbf{x}_j\mathbf{b} + \text{offset}_j$.

adjusted adjusts the deviance residual to make the convergence to the limiting normal distribution faster. The adjustment deals with adding to the deviance residual a higher-order term depending on the variance function family. This option is allowed only when deviance is specified.

standardized requests that the residual be multiplied by the factor $(1-h)^{-1/2}$, where h is the diagonal of the hat matrix. This step is done to take into account the correlation between *depvar* and its predicted value.

studentized requests that the residual be multiplied by one over the square root of the estimated scale parameter.

modified requests that the denominator of the residual be modified to be a reasonable estimate of the variance of *depvar*. The base residual is multiplied by the factor $(k/w)^{-1/2}$, where k is either one or the user-specified dispersion parameter and w is the specified weight (or one if left unspecified).

margins

Description for margins

`margins` estimates margins of response for expected values and linear predictions.

Menu for margins

Statistics > Postestimation

Syntax for margins

`margins` [*marginlist*] [, *options*]

`margins` [*marginlist*] , `predict(`*statistic* ...`)` [`predict(`*statistic* ...`)` ...] [*options*]

statistic	Description
`mu`	expected value of y; the default
`xb`	linear prediction $\eta = \mathbf{x}\widehat{\boldsymbol{\beta}}$
`eta`	synonym for `xb`
`stdp`	not allowed with `margins`
`anscombe`	not allowed with `margins`
`cooksd`	not allowed with `margins`
`deviance`	not allowed with `margins`
`hat`	not allowed with `margins`
`likelihood`	not allowed with `margins`
`pearson`	not allowed with `margins`
`response`	not allowed with `margins`
`score`	not allowed with `margins`
`working`	not allowed with `margins`

Statistics not allowed with `margins` are functions of stochastic quantities other than `e(b)`.

For the full syntax, see [R] **margins**.

References

Anscombe, F. J. 1953. Contribution of discussion paper by H. Hotelling "New light on the correlation coefficient and its transforms". *Journal of the Royal Statistical Society,* B ser., 15: 229–230. https://doi.org/10.1111/j.2517-6161.1953.tb00136.x.

McCullagh, P., and J. A. Nelder. 1989. *Generalized Linear Models*. 2nd ed. London: Chapman and Hall/CRC.

Also see

[R] **binreg** — Generalized linear models: Extensions to the binomial family

[U] 20 Estimation and postestimation commands

For suggested citations, see the FAQ on citing Stata documentation.