Title

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binreg postestimation — Postestimation tools for binreg

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Postestimation commands

The following postestimation commands are available after `binreg`:

Command	Description
contrast	contrasts and ANOVA-style joint tests of estimates
* estat ic	Akaike's, consistent Akaike's, corrected Akaike's, and Schwarz's Bayesian information criteria (AIC, CAIC, AICc, and BIC)
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 coefficients
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 coefficients
predict	predictions, residuals, influence statistics, and other diagnostic measures
predictnl	point estimates, standard errors, testing, and inference for generalized predictions
pwcompare	pairwise comparisons of estimates
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.

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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	
<u>m</u>u	expected value of y; the default
xb	linear prediction $\eta = \mathbf{x}\widehat{\boldsymbol{\beta}}$
<u>e</u>ta	synonym for xb
stdp	standard error of the linear prediction
<u>a</u>nscombe	Anscombe (1953) residuals
<u>c</u>ooksd	Cook's distance
<u>d</u>eviance	deviance residuals
<u>h</u>at	diagonals of the "hat" matrix
<u>l</u>ikelihood	weighted average of the standardized deviance and standard Pearson residuals
<u>p</u>earson	Pearson residuals
<u>r</u>esponse	differences between the observed and fitted outcomes
<u>s</u>core	first derivative of the log likelihood with respect to $\mathbf{x}_j\boldsymbol{\beta}$
<u>w</u>orking	working residuals

options	Description
Options	
<u>noo</u>ffset	modify calculations to ignore the offset variable
<u>a</u>djusted	adjust deviance residual to speed up convergence
<u>s</u>tandardized	multiply residual by the factor $(1-h)^{1/2}$
<u>s</u>tudentized	multiply residual by one over the square root of the estimated scale parameter
<u>mo</u>dified	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*] , <u>predict</u>(*statistic* ...) [<u>predict</u>(*statistic* ...) ...] [*options*]

statistic	Description
<u>mu</u>	expected value of y; the default
xb	linear prediction $\eta = \mathbf{x}\widehat{\boldsymbol{\beta}}$
<u>eta</u>	synonym for xb
stdp	not allowed with margins
<u>ans</u>combe	not allowed with margins
<u>c</u>ooksd	not allowed with margins
<u>d</u>eviance	not allowed with margins
hat	not allowed with margins
<u>l</u>ikelihood	not allowed with margins
<u>p</u>earson	not allowed with margins
<u>r</u>esponse	not allowed with margins
<u>s</u>core	not allowed with margins
<u>w</u>orking	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, Series B* 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

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