

**zinb postestimation** — Postestimation tools for zinb

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## Postestimation commands

The following postestimation commands are available after `zinb`:

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

\* `forecast`, `hausman`, and `lrtest` are not appropriate with `svy` estimation results.

## predict

### Description for predict

`predict` creates a new variable containing predictions such as numbers of events, incidence rates, probabilities, linear predictions, and standard errors.

### Menu for predict

Statistics > Postestimation

### Syntax for predict

```
predict [type] newvar [if] [in] [, statistic nooffset]
```

```
predict [type] { stub* | newvarreg newvarinflate newvarlnalpha } [if] [in], scores
statistic      Description
```

Main

<code>n</code>	number of events; the default
<code>ir</code>	incidence rate
<code>pr</code>	probability of a degenerate zero
<code>pr(<i>n</i>)</code>	probability $\Pr(y_j = n)$
<code>pr(<i>a</i>,<i>b</i>)</code>	probability $\Pr(a \leq y_j \leq b)$
<code>xb</code>	linear prediction
<code>stdp</code>	standard error of the linear prediction

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

`n`, the default, calculates the predicted number of events, which is  $(1 - F_j) \exp(\mathbf{x}_j \boldsymbol{\beta})$  if neither `offset()` nor `exposure()` was specified when the model was fit, where  $F_j$  is the predicted probability of a zero outcome;  $(1 - F_j) \exp(\mathbf{x}_j \boldsymbol{\beta} + \text{offset}_j^\beta)$  if `offset()` was specified; or  $(1 - F_j) \{ \exp(\mathbf{x}_j \boldsymbol{\beta}) \times \text{exposure}_j \}$  if `exposure()` was specified.

`ir` calculates the incidence rate, which is the predicted number of events when exposure is 1. This is equivalent to specifying both the `n` and the `nooffset` options.

`pr` calculates the probability of a degenerate zero, predicted from the fitted degenerate distribution  $F_j = F(\mathbf{z}_j \boldsymbol{\gamma})$ . If `offset()` was specified within the `inflate()` option, then  $F_j = F(\mathbf{z}_j \boldsymbol{\gamma} + \text{offset}_j^\gamma)$  is calculated.

`pr(n)` calculates the probability  $\Pr(y_j = n)$ , where *n* is a nonnegative integer that may be specified as a number or a variable. Note that `pr` is not equivalent to `pr(0)`.

`pr(a,b)` calculates the probability  $\Pr(a \leq y_j \leq b)$ , where  $a$  and  $b$  are nonnegative integers that may be specified as numbers or variables;

$b$  missing ( $b \geq .$ ) means  $+\infty$ ;

`pr(20,.)` calculates  $\Pr(y_j \geq 20)$ ;

`pr(20,b)` calculates  $\Pr(y_j \geq 20)$  in observations for which  $b \geq .$  and calculates

$\Pr(20 \leq y_j \leq b)$  elsewhere.

`pr(.,b)` produces a syntax error. A missing value in an observation of the variable  $a$  causes a missing value in that observation for `pr(a,b)`.

`xb` calculates the linear prediction, which is  $\mathbf{x}_j\beta$  if neither `offset()` nor `exposure()` was specified;

$\mathbf{x}_j\beta + \text{offset}_j^\beta$  if `offset()` was specified; or  $\mathbf{x}_j\beta + \ln(\text{exposure}_j)$  if `exposure()` was specified; see `nooffset` below.

`stdp` calculates the standard error of the linear prediction.

`nooffset` is relevant only if you specified `offset()` or `exposure()` when you fit the model. It modifies the calculations made by `predict` so that they ignore the offset or exposure variable; the linear prediction is treated as  $\mathbf{x}_j\beta$  rather than as  $\mathbf{x}_j\beta + \text{offset}_j^\beta$  or  $\mathbf{x}_j\beta + \ln(\text{exposure}_j)$ . Specifying `predict ... , nooffset` is equivalent to specifying `predict ... , ir`.

`scores` calculates equation-level score variables.

The first new variable will contain  $\partial \ln L / \partial (\mathbf{x}_j\beta)$ .

The second new variable will contain  $\partial \ln L / \partial (\mathbf{z}_j\gamma)$ .

The third new variable will contain  $\partial \ln L / \partial \ln \alpha$ .

## margins

### Description for margins

`margins` estimates margins of response for number of events, incidence rates, probabilities, and linear predictions.

### Menu for margins

Statistics > Postestimation

### Syntax for margins

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

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

<i>statistic</i>	Description
<code>n</code>	number of events; the default
<code>ir</code>	incidence rate
<code>pr</code>	probability of a degenerate zero
<code>pr(<i>n</i>)</code>	probability $\Pr(y_j = n)$
<code>pr(<i>a</i>,<i>b</i>)</code>	probability $\Pr(a \leq y_j \leq b)$
<code>xb</code>	linear prediction
<code>stdp</code>	not allowed with <code>margins</code>

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

For the full syntax, see [R] [margins](#).

### Methods and formulas

See [Methods and formulas](#) in [R] [zinb](#) for the model definition and notation.

The probabilities calculated using the `pr(n)` option are the probability  $\Pr(y_j = n)$ . These are calculated using

$$\Pr(y_j = 0 | \mathbf{x}_j, \mathbf{z}_j) = F_j + (1 - F_j) p_2(0 | \mathbf{x}_j)$$

$$\Pr(y_j = n | \mathbf{x}_j, \mathbf{z}_j) = (1 - F_j) p_2(n | \mathbf{x}_j) \quad \text{for } n = 1, 2, \dots$$

where  $F_j$  is the probability of obtaining an observation from the degenerate distribution whose mass is concentrated at zero, and  $p_2(n | \mathbf{x}_j)$  is the probability of  $y_j = n$  from the nondegenerate, negative binomial distribution.  $F_j$  can be obtained by using the `pr` option.

See [Cameron and Trivedi \(2013, sec. 4.6\)](#) for further details.

## References

- Cameron, A. C., and P. K. Trivedi. 2013. *Regression Analysis of Count Data*. 2nd ed. New York: Cambridge University Press.
- Manjón, M., and O. Martínez. 2014. The chi-squared goodness-of-fit test for count-data models. *Stata Journal* 14: 798–816.

## Also see

- [R] [zinp](#) — Zero-inflated negative binomial regression
- [U] [20 Estimation and postestimation commands](#)