Title

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nlogit postestimation — Postestimation tools for nlogit

Postestimation commands

The following postestimation command is of special interest after `nlogit`:

Command	Description
`estat alternatives`	alternative summary statistics

The following standard postestimation commands are also available:

Command	Description
`contrast`	contrasts and ANOVA-style joint tests of estimates
`estat ic`	Akaike's and Schwarz's Bayesian information criteria (AIC and BIC)
`estat summarize`	summary statistics for the estimation sample
`estat vce`	variance–covariance matrix of the estimators (VCE)
`estimates`	cataloging estimation results
`hausman`	Hausman's specification test
`lincom`	point estimates, standard errors, testing, and inference for linear combinations of coefficients
`lrtest`	likelihood-ratio test
`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
`test`	Wald tests of simple and composite linear hypotheses
`testnl`	Wald tests of nonlinear hypotheses

predict

Description for predict

`predict` creates a new variable containing predictions such as probabilities, linear predictions, conditional probabilities, and inclusive values.

Menu for predict

Statistics > Postestimation

Syntax for predict

`predict` [*type*] *newvar* [*if*] [*in*] [, *statistic* `hlevel(#) altwise`]

`predict` [*type*] { *stub*`*` | *newvarlist* } [*if*] [*in*], `scores`

statistic	Description
Main	
`pr`	predicted probabilities of choosing the alternatives at all levels of the hierarchy or at level #, where # is specified by `hlevel(#)`; the default
`xb`	linear predictors for all levels of the hierarchy or at level #, where # is specified by `hlevel(#)`
`condp`	predicted conditional probabilities at all levels of the hierarchy or at level #, where # is specified by `hlevel(#)`
`iv`	inclusive values for levels 2, ..., `e(levels)` or for `hlevel(#)`

The inclusive value for the first-level alternatives is not used in estimation; therefore, it is not calculated.

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

`pr` calculates the probability of choosing each alternative at each level of the hierarchy. Use the `hlevel(#)` option to compute the alternative probabilities at level #. When `hlevel(#)` is not specified, j new variables must be given, where j is the number of levels, or use *stub*`*` to have `predict` generate j variables with the prefix *stub* and numbered from 1 to j. The `pr` option is the default and if one new variable is given, the probability of the bottom-level alternatives are computed. Otherwise, probabilities for all levels are computed and *stub*`*` is still valid.

`xb` calculates the linear prediction for each alternative at each level. Use the `hlevel(#)` option to compute the linear predictor at level #. When `hlevel(#)` is not specified, j new variables must be given, where j is the number of levels, or use *stub*`*` to have `predict` generate j variables with the prefix *stub* and numbered from 1 to j.

`condp` calculates the conditional probabilities for each alternative at each level. Use the `hlevel(#)` option to compute the conditional probabilities of the alternatives at level #. When `hlevel(#)` is not specified, j new variables must be given, where j is the number of levels, or use *stub*`*` to have `predict` generate j variables with the prefix *stub* and numbered from 1 to j.

`iv` calculates the inclusive value for each alternative at each level. Use the `hlevel(#)` option to compute the inclusive value at level #. There is no inclusive value at level 1. If `hlevel(#)` is not used, $j-1$ new variables are required, where j is the number of levels, or use *stub*`*` to have `predict` generate $j-1$ variables with the prefix *stub* and numbered from 2 to j. See *Methods and formulas* in [R] **nlogit** for a definition of the inclusive values.

`hlevel(#)` calculates the prediction only for hierarchy level #.

`altwise` specifies that alternativewise deletion be used when marking out observations due to missing values in your variables. The default is to use casewise deletion. The `xb` option always uses alternativewise deletion.

`scores` calculates the scores for each coefficient in `e(b)`. This option requires a new-variable list of length equal to the number of columns in `e(b)`. Otherwise, use *stub*`*` to have `predict` generate enumerated variables with prefix *stub*.

estat

Description for estat

`estat alternatives` displays summary statistics about the alternatives in the estimation sample for each level of the tree structure.

Menu for estat

Statistics > Postestimation

Syntax for estat

```
estat alternatives
```

Remarks and examples

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`predict` may be used after `nlogit` to obtain the predicted values of the probabilities, the conditional probabilities, the linear predictions, and the inclusive values for each level of the nested logit model. Predicted probabilities for `nlogit` must be interpreted carefully. Probabilities are estimated for each case as a whole and not for individual observations.

▷ Example 1

Continuing with our model in example 3 of [R] **nlogit**, we refit the model and then examine a summary of the alternatives and their frequencies in the estimation sample.

```
. use http://www.stata-press.com/data/r15/restaurant
. nlogitgen type = restaurant(fast: Freebirds | MamasPizza,
> family: CafeEccell | LosNortenos | WingsNmore, fancy: Christophers | MadCows)
```

(*output omitted*)

```
. nlogit chosen cost rating distance || type: income kids, base(family) ||
> restaurant:, noconst case(family_id)
```

(*output omitted*)

```
. estat alternatives
```

Alternatives summary for type

Alternative index	Alternative value	label	Cases present	Frequency selected	Percent selected
1	1	fast	600	27	9.00
2	2	family	900	222	74.00
3	3	fancy	600	51	17.00

Alternatives summary for restaurant

Alternative index	Alternative value	label	Cases present	Frequency selected	Percent selected
1	1	Freebirds	300	12	4.00
2	2	MamasPizza	300	15	5.00
3	3	CafeEccell	300	78	26.00
4	4	LosNortenos	300	75	25.00
5	5	WingsNmore	300	69	23.00
6	6	Christophers	300	27	9.00
7	7	MadCows	300	24	8.00

Next we predict `p2` $= \Pr($`restaurant`$)$; `p1` $= \Pr($`type`$)$; `condp` $= \Pr($`restaurant` $\mid$ `type`$)$; `xb2`, the linear prediction for the bottom-level alternatives; `xb1`, the linear prediction for the first-level alternatives; and `iv`, the inclusive values for the bottom-level alternatives.

```
. predict p*
(option pr assumed)
. predict condp, condp hlevel(2)
. sort family_id type restaurant
. list restaurant type chosen p2 p1 condp in 1/14, sepby(family_id) divider
```

	restaurant	type	chosen	p2	p1	condp
1.	Freebirds	fast	1	.0642332	.1189609	.5399519
2.	MamasPizza	fast	0	.0547278	.1189609	.4600481
3.	CafeEccell	family	0	.284409	.7738761	.3675124
4.	LosNortenos	family	0	.3045242	.7738761	.3935051
5.	WingsNmore	family	0	.1849429	.7738761	.2389825
6.	Christophers	fancy	0	.0429508	.107163	.4007991
7.	MadCows	fancy	0	.0642122	.107163	.5992009
8.	Freebirds	fast	0	.0183578	.0488948	.3754559
9.	MamasPizza	fast	0	.030537	.0488948	.6245441
10.	CafeEccell	family	0	.2832149	.756065	.3745907
11.	LosNortenos	family	1	.3038883	.756065	.4019341
12.	WingsNmore	family	0	.1689618	.756065	.2234752
13.	Christophers	fancy	0	.1041277	.1950402	.533878
14.	MadCows	fancy	0	.0909125	.1950402	.466122

```
. predict xb*, xb
. predict iv, iv
```

```
. list restaurant type chosen xb* iv in 1/14, sepby(family_id) divider
```

	restaurant	type	chosen	xb1	xb2	iv
1.	Freebirds	fast	1	-1.124805	-1.476914	-.2459659
2.	MamasPizza	fast	0	-1.124805	-1.751229	-.2459659
3.	CafeEccell	family	0	0	-2.181112	.1303341
4.	LosNortenos	family	0	0	-2.00992	.1303341
5.	WingsNmore	family	0	0	-3.259229	.1303341
6.	Christophers	fancy	0	1.405185	-6.804211	-.745332
7.	MadCows	fancy	0	1.405185	-5.155514	-.745332
8.	Freebirds	fast	0	-1.804794	-2.552233	-.5104123
9.	MamasPizza	fast	0	-1.804794	-1.680583	-.5104123
10.	CafeEccell	family	0	0	-2.400434	.0237072
11.	LosNortenos	family	1	0	-2.223939	.0237072
12.	WingsNmore	family	0	0	-3.694409	.0237072
13.	Christophers	fancy	0	1.490775	-5.35932	-.6796131
14.	MadCows	fancy	0	1.490775	-5.915751	-.6796131

Also see

[R] **nlogit** — Nested logit regression

[U] **20 Estimation and postestimation commands**