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      log:  c:\237c\hwlogs\HW5Q1and2.log
      log type:  text
      opened on:  25 Mar 2003, 14:17:19

. use "c:\237c\new hw datasets\hw5q1and2", clear

** Example is the same as before, i.e., impact of supplemental insurance on the
number of doctor visits, using a two-part model; this time, however, we take
into account the fact that insurance coverage is determined simultaneously with
doctor visits **

. *generate a dichotomous indicator for any doctor visits*
. **Note that this command is sufficient because we have no missing
observations**
. gen any=0

. replace any=1 if docvis>0
(9425 real changes made)

. *define global vars*
. global depv any

. global indiv in_supp age r_asian r_black r_other latino ed_bach ed_coll ed_gra
> d ed_hs mar_div mar_mar mar_wid hlt_fp famsize finc_0 finc_5 finc_10 finc_15
> finc_20 finc_25 finc_35

. global preg in_supp

. global selectv age r_asian r_black r_other latino ed_bach ed_coll ed_grad ed_
> hs mar_div mar_mar mar_wid hlt_fp famsize finc_0 finc_5 finc_10 finc_15 finc_
> 20 finc_25 finc_35

. *save original value for preg*
. gen orig=$preg

** The bivariate probit regression estimates pr(any doctor visits)
simultaneously with the pr(supplemental insurance) **

. biprobit (eq1:$depv=$indv) (eq2:$preg=$selectv)

Fitting comparison equation 1:

Iteration 0:  log likelihood = -4088.5846
Iteration 1:  log likelihood = -3876.5311
Iteration 2:  log likelihood = -3871.9999
Iteration 3:  log likelihood = -3871.9911

Fitting comparison equation 2:

Iteration 0:  log likelihood = -4369.6785
Iteration 1:  log likelihood = -3878.678
Iteration 2:  log likelihood = -3870.2802
Iteration 3:  log likelihood = -3870.2585
Iteration 4:  log likelihood = -3870.2585

Comparison:  log likelihood = -7742.2495

Fitting full model:

Iteration 0:  log likelihood = -7742.2495
Iteration 1:  log likelihood = -7740.8098

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Iteration 2: log likelihood = -7737.7519
 Iteration 3: log likelihood = -7737.6095
 Iteration 4: log likelihood = -7737.5508
 Iteration 5: log likelihood = -7737.5507

Seemingly unrelated bivariate probit

Number of obs = 10786
 Wald chi2(43) = 1327.79
 Prob > chi2 = 0.0000

Log likelihood = -7737.5507

	Coef.	Std. Err.	z	P> z	[99% Conf. Interval]	

eq1						
in_supp	-.5220551	.2925475	-1.78	0.074	-1.275608	.2314974
age	.0173583	.0026835	6.47	0.000	.0104461	.0242705
r_asian	.0343568	.1551853	0.22	0.825	-.365374	.4340876
r_black	-.1015369	.0845119	-1.20	0.230	-.3192252	.1161514
r_other	-.1315407	.1255047	-1.05	0.295	-.4548192	.1917379
latino	-.0189347	.0813777	-0.23	0.816	-.2285499	.1906804
ed_bach	.2963634	.0738811	4.01	0.000	.1060582	.4866686
ed_coll	.1664617	.0563995	2.95	0.003	.0211862	.3117372
ed_grad	.3325186	.0835382	3.98	0.000	.1173386	.5476987
ed_hs	.1611271	.0397542	4.05	0.000	.0587272	.2635271
mar_div	.0776897	.0957972	0.81	0.417	-.1690675	.3244469
mar_mar	.2127315	.0792079	2.69	0.007	.0087055	.4167575
mar_wid	.2351496	.0786929	2.99	0.003	.03245	.4378492
hlt_fp	.5672995	.0516548	10.98	0.000	.4342457	.7003534
famsize	-.1035361	.0289357	-3.58	0.000	-.1780696	-.0290027
finc_0	-.3409008	.1162786	-2.93	0.003	-.6404146	-.0413871
finc_5	-.2760468	.0837008	-3.30	0.001	-.4916458	-.0604477
finc_10	-.0995326	.0744687	-1.34	0.181	-.2913513	.0922861
finc_15	-.1141523	.067084	-1.70	0.089	-.2869492	.0586446
finc_20	.0544006	.0707979	0.77	0.442	-.1279629	.236764
finc_25	.0915775	.0680211	1.35	0.178	-.0836333	.2667883
finc_35	.0784682	.0738853	1.06	0.288	-.1118478	.2687842
_cons	.1228323	.3988735	0.31	0.758	-.9045978	1.150262

eq2						
age	.0007988	.0024409	0.33	0.743	-.0054886	.0070862
r_asian	-.4674399	.1277432	-3.66	0.000	-.7964846	-.1383952
r_black	-.5613662	.0462993	-12.12	0.000	-.6806253	-.4421071
r_other	-.155497	.118489	-1.31	0.189	-.4607045	.1497105
latino	-.3729399	.0602592	-6.19	0.000	-.5281572	-.2177226
ed_bach	.3382021	.0815227	4.15	0.000	.1282137	.5481906
ed_coll	.2689255	.0593223	4.53	0.000	.1161215	.4217295
ed_grad	.4313956	.095924	4.50	0.000	.1843118	.6784794
ed_hs	.214491	.0383287	5.60	0.000	.1157628	.3132191
mar_div	-.1104984	.0956594	-1.16	0.248	-.3569007	.1359038
mar_mar	.2533125	.0817397	3.10	0.002	.0427649	.4638601
mar_wid	.0892355	.0817292	1.09	0.275	-.1212849	.2997558
hlt_fp	.0216936	.0353167	0.61	0.539	-.0692762	.1126634
famsize	-.2362865	.0167073	-14.14	0.000	-.2793217	-.1932512
finc_0	-.6400313	.0989333	-6.47	0.000	-.8948667	-.385196
finc_5	-.4923777	.0768304	-6.41	0.000	-.6902797	-.2944757
finc_10	-.3085455	.0736339	-4.19	0.000	-.498214	-.118877
finc_15	-.0487981	.0745532	-0.65	0.513	-.2408344	.1432382
finc_20	.1356365	.0803164	1.69	0.091	-.0712447	.3425178
finc_25	.0523315	.0760415	0.69	0.491	-.1435384	.2482015
finc_35	.1856996	.0839477	2.21	0.027	-.0305354	.4019347
_cons	1.483888	.2176596	6.82	0.000	.9232337	2.044542

/athrho	.5774918	.2282705	2.53	0.011	-.0104939	1.165478

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rho | .5208401 .1663465 - .0104935 .822817
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Likelihood ratio test of rho=0: chi2(1) = 9.39761 Prob > chi2 = 0.0022

. *Compare predicted and actual probabilities of outcome measure*
. predict p, pmarg1

. sum $depv

Variable | Obs Mean Std. Dev. Min Max
-----+-----
any | 10786 .8738179 .3320699 0 1

. sum p

Variable | Obs Mean Std. Dev. Min Max
-----+-----
p | 10786 .8612576 .0691887 .4098724 .9969853

. *Get predicted prob of outcome when preg is set to 0 and then 1*
. replace $preg=0
(9275 real changes made)

. predict p0, pmarg1

. replace $preg=1
(10786 real changes made)

. predict p1, pmarg1

. replace $preg=orig
(1511 real changes made)

. *Relative Risk of outcome*
. gen rr=p1/p0

. sum p1 p0 rr

Variable | Obs Mean Std. Dev. Min Max
-----+-----
p1 | 10786 .8471685 .0708246 .3682418 .98693
p0 | 10786 .9361466 .0381391 .5735978 .9969853
rr | 10786 .90332 .0405527 .641986 .9899143

. ***Program to Run Treatment Effects Model and Get Predictive Margins***

** Now estimate conditional number of doctor visits among subsample with any**

. keep if any==1
(1361 observations deleted)

. global depv docvis

** The treatment effects regression estimates the conditional level of any
doctor visits simultaneously with pr(supplemental insurance) **

. ***ML estimation of the treatment effects model does not always converge***
. ***treatreg $depv $indv, treat ($preg=$selectv)
. *** (In this case, commented out because it didn't converge) ***
.
. ***Try 2-step method if it doesn't converge using ML ***

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lambda | -1.782217  3.183647  -0.56  0.576  -9.982748  6.418315
-----+-----
rho | -0.07838
sigma | 22.738156
lambda | -1.7822166  3.183647
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. **Get unconditional expected value of outcome for entire sample at original
regressor values to compare with actual values***

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. predict xb, xb

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. sum $depv xb

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Variable |      Obs      Mean  Std. Dev.      Min      Max
-----+-----
docvis |   9425   8.029178  23.09259         1     997
xb |   9425   8.029178  4.365269 -2.649968  22.8972

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. *Get predictions when preg is set to 0

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. replace $preg=0
(8230 real changes made)

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. predict xb0, xb

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. *Get predictions when preg is set to 1

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. replace $preg=1
(9425 real changes made)

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. predict xb1, xb

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. replace $preg=orig
(1195 real changes made)

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. *Predictive margin for expected outcome among entire sample*

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. gen xbdiff=xb1-xb0

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. sum xb1 xb0 xbdiff

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Variable |      Obs      Mean  Std. Dev.      Min      Max
-----+-----
xb1 |   9425   8.587754  4.294008  1.395554  22.8972
xb0 |   9425   4.18225  4.294008 -3.00995  18.4917
xbdifff |   9425   4.405504  3.32e-07  4.405502  4.405505

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. log close

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log: c:\237c\hwlogs\HW5Q1and2.log

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log type: text

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closed on: 25 Mar 2003, 14:17:29
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