I

```
. describe $ylist $xlist

              storage  display     value
variable name   type   format      label      variable label
------------------------------------------------------------------------------
mode            float  %9.0g       modetype   Fishing mode
income          float  %9.0g                  monthly income in thousands $

. summarize $ylist $xlist

    Variable |       Obs        Mean    Std. Dev.       Min        Max
-------------+--------------------------------------------------------
        mode |      1182    3.005076    .9936162          1          4
      income |      1182    4.099337    2.461964   .4166667       12.5

.
. tabulate $ylist

    Fishing |
       mode |      Freq.     Percent        Cum.
------------+-----------------------------------
      beach |        134       11.34       11.34
       pier |        178       15.06       26.40
    private |        418       35.36       61.76
    charter |        452       38.24      100.00
------------+-----------------------------------
      Total |      1,182      100.00
```

II

```
Multinomial logistic regression                 Number of obs   =       1182
                                                LR chi2(3)      =      41.14
                                                Prob > chi2     =     0.0000
Log likelihood = -1477.1506                     Pseudo R2       =     0.0137

------------------------------------------------------------------------------
        mode |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
beach        |
      income |   .0316399   .0418463     0.76   0.450    -.0503774    .1136571
       _cons |  -1.341291   .1945167    -6.90   0.000    -1.722537   -.9600457
-------------+----------------------------------------------------------------
pier         |
      income |   -.111763   .0439795    -2.54   0.011    -.1979612   -.0255649
       _cons |  -.5271412   .1777842    -2.97   0.003    -.8755918   -.1786906
-------------+----------------------------------------------------------------
private      |
      income |   .1235462   .0279106     4.43   0.000     .0688425      .17825
       _cons |  -.6023707   .1360964    -4.43   0.000    -.8691147   -.3356267
-------------+----------------------------------------------------------------
charter      |  (base outcome)
------------------------------------------------------------------------------
```

III

```
Multinomial logistic regression                 Number of obs   =       1182
                                                LR chi2(3)      =      41.14
                                                Prob > chi2     =     0.0000
Log likelihood = -1477.1506                     Pseudo R2       =     0.0137

------------------------------------------------------------------------------
        mode |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
beach        |
      income |   .1434029   .0532884     2.69   0.007     .0389595    .2478463
       _cons |  -.8141503    .228632    -3.56   0.000    -1.262261   -.3660399
-------------+----------------------------------------------------------------
pier         |  (base outcome)
-------------+----------------------------------------------------------------
private      |
      income |   .2353093   .0436681     5.39   0.000     .1497214    .3208971
       _cons |  -.0752295   .1832396    -0.41   0.681    -.4343724    .2839134
-------------+----------------------------------------------------------------
charter      |
      income |    .111763   .0439795     2.54   0.011     .0255649    .1979612
```

```
. * Multinomial logit marginal effects
. margins, dydx(*) atmeans predict(pr outcome(1))

Conditional marginal effects                      Number of obs   =       1182
Model VCE    : OIM

Expression   : Pr(mode==beach), predict(pr outcome(1))
dy/dx w.r.t. : income
at           : income          =     4.099337 (mean)

------------------------------------------------------------------------------
             |            Delta-method
             |      dy/dx   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
      income |    .000075   .0039337     0.02   0.985    -.0076349    .0077848
------------------------------------------------------------------------------

. margins, dydx(*) atmeans predict(pr outcome(2))

Conditional marginal effects                      Number of obs   =       1182
Model VCE    : OIM

Expression   : Pr(mode==pier), predict(pr outcome(2))
dy/dx w.r.t. : income
at           : income          =     4.099337 (mean)

------------------------------------------------------------------------------
             |            Delta-method
             |      dy/dx   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
      income |  -.0206598   .0048735    -4.24   0.000    -.0302117    -.011108
------------------------------------------------------------------------------

. * Multinomial logit predicted probabilities
. predict pmlogit1 pmlogit2 pmlogit3 pmlogit4, pr

. summarize pmlogit1 pmlogit2 pmlogit3 pmlogit4

    Variable |       Obs        Mean    Std. Dev.       Min        Max
-------------+--------------------------------------------------------
    pmlogit1 |      1182    .1133672    .0036716   .0947395   .1153659
    pmlogit2 |      1182    .1505922    .0444575   .0356142   .2342903
    pmlogit3 |      1182    .3536379    .0797714   .2396973    .625706
    pmlogit4 |      1182    .3824027    .0346281   .2439403   .4158273

. tabulate $ylist

    Fishing |
       mode |      Freq.     Percent        Cum.
------------+-----------------------------------
      beach |        134       11.34       11.34
       pier |        178       15.06       26.40
    private |        418       35.36       61.76
    charter |        452       38.24      100.00
------------+-----------------------------------
      Total |      1,182      100.00
```

VI

```
. * Multinomial probit with base outcome alternative 2
. mprobit $ylist $xlist, baseoutcome(2)

Iteration 0:   log likelihood = -1479.5592
Iteration 1:   log likelihood = -1477.7997
Iteration 2:   log likelihood = -1477.7976
Iteration 3:   log likelihood = -1477.7976

Multinomial probit regression                     Number of obs   =       1182
                                                  Wald chi2(3)    =      37.94
Log likelihood = -1477.7976                       Prob > chi2     =     0.0000

------------------------------------------------------------------------------
        mode |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
beach        |
      income |    .083489   .0319262     2.62   0.009     .0209148    .1460633
       _cons |  -.4978891   .1431133    -3.48   0.001    -.7783861   -.2173921
-------------+----------------------------------------------------------------
pier         |  (base outcome)
-------------+----------------------------------------------------------------
private      |
      income |    .157239   .0278334     5.65   0.000     .1026865    .2117914
       _cons |  -.0132926   .1247614    -0.11   0.915    -.2578205    .2312353
-------------+----------------------------------------------------------------
charter      |
      income |   .0570537   .0282839     2.02   0.044     .0016183    .1124891
       _cons |   .4695829   .1232788     3.81   0.000     .2279609    .7112048
------------------------------------------------------------------------------

. margins, dydx(*) atmeans predict(pr outcome(2))
```

VII

```
Conditional marginal effects                      Number of obs   =       1182
Model VCE    : OIM

Expression   : Pr(mode==pier), predict(pr outcome(2))
dy/dx w.r.t. : income
at           : income          =     4.099337 (mean)

------------------------------------------------------------------------------
             |            Delta-method
             |      dy/dx   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
      income |  -.0188373   .0045868    -4.11   0.000    -.0278272   -.0098473
------------------------------------------------------------------------------

. margins, dydx(*) atmeans predict(pr outcome(3))

Conditional marginal effects                      Number of obs   =       1182
Model VCE    : OIM

Expression   : Pr(mode==private), predict(pr outcome(3))
dy/dx w.r.t. : income
at           : income          =     4.099337 (mean)

------------------------------------------------------------------------------
             |            Delta-method
             |      dy/dx   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
      income |   .0322113   .0057138     5.64   0.000     .0210125    .0434102
------------------------------------------------------------------------------
```

VIII

```
. summarize p1 p2 p3 p4

    Variable |       Obs        Mean    Std. Dev.       Min        Max
-------------+--------------------------------------------------------
          p1 |      1182    .1134043    .0034727   .0955361   .1151246
          p2 |      1182    .1506004    .0412343   .0366767   .2234988
          p3 |      1182    .3536541    .0788187    .240304   .6223192
          p4 |      1182    .3823412    .0359223   .2454679   .4246298

. tabulate $ylist

    Fishing |
       mode |      Freq.     Percent        Cum.
------------+-----------------------------------
      beach |        134       11.34       11.34
       pier |        178       15.06       26.40
    private |        418       35.36       61.76
    charter |        452       38.24      100.00
------------+-----------------------------------
      Total |      1,182      100.00
```

IX

```
. * Dependent variable is 1 or 0 whether the alternative is selected or not
. * xlist is case-specific regressors and zlist is alternative-specific regressors
. global ylist d

. global xlist income

. global zlist p q

. global id id

. global alternative fishmode

. global basealternative1 pier

. global basealternative2 charter

. describe $id $alternative $ylist $xlist $zlist

              storage  display     value
variable name   type   format      label      variable label
------------------------------------------------------------------------------
id              float  %9.0g                  person id number
fishmode        str7   %9s                    available alternatives
d               float  %9.0g                  =1 if chosen alternative
income          float  %9.0g                  monthly income in thousands $
p               float  %9.0g                  price for available alternatives
q               float  %9.0g                  catch rate for available alternatives

. summarize $id $alternative $ylist $xlist $zlist

    Variable |       Obs        Mean    Std. Dev.       Min        Max
-------------+--------------------------------------------------------
          id |      4728       591.5      341.25          1       1182
    fishmode |         0
           d |      4728         .25    .4330585          0          1
      income |      4728    4.099337    2.461183   .4166667       12.5
           p |      4728    86.61996    88.01813       1.29    843.186
-------------+--------------------------------------------------------
           q |      4728    .3009544    .4335593      .0002     2.3101
```

X

```
. * Conditional logit model with base outcome set as basealternative1
. asclogit $ylist $zlist, case($id) alternatives($alternative) casevars($xlist)
basealternative($basealte
> rnative1)

Iteration 0:   log likelihood = -1270.0164
Iteration 1:   log likelihood = -1217.7258
Iteration 2:   log likelihood = -1215.1499
Iteration 3:   log likelihood = -1215.1376
Iteration 4:   log likelihood = -1215.1376

Alternative-specific conditional logit          Number of obs      =        4728
Case variable: id                               Number of cases    =        1182

Alternative variable: fishmode                  Alts per case: min =           4
                                                               avg =         4.0
                                                               max =           4

                                                Wald chi2(5)       =      252.98
Log likelihood = -1215.1376                     Prob > chi2        =      0.0000

------------------------------------------------------------------------------
           d |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
fishmode     |
           p |  -.0251166   .0017317   -14.50   0.000    -.0285106   -.0217225
           q |    .357782   .1097733     3.26   0.001     .1426302    .5729337
-------------+----------------------------------------------------------------
beach        |
      income |   .1275771   .0506395     2.52   0.012     .0283255    .2268288
       _cons |  -.7779594   .2204939    -3.53   0.000     -1.21012   -.3457992
-------------+----------------------------------------------------------------
charter      |
      income |   .0942854     .05006     1.88   0.060    -.0038303    .1924012
       _cons |   .9164063   .2072648     4.42   0.000     .5101748    1.322638
-------------+----------------------------------------------------------------
pier         |  (base alternative)
-------------+----------------------------------------------------------------
private      |
      income |    .217017   .0500582     4.34   0.000     .1189047    .3151293
       _cons |  -.2506806   .2039395    -1.23   0.219    -.6503948    .1490336
------------------------------------------------------------------------------
```

XI

```
Alternative-specific conditional logit          Number of obs      =        4728
Case variable: id                               Number of cases    =        1182

Alternative variable: fishmode                  Alts per case: min =           4
                                                               avg =         4.0
                                                               max =           4

                                                Wald chi2(5)       =      252.98
Log likelihood = -1215.1376                     Prob > chi2        =      0.0000

------------------------------------------------------------------------------
           d |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
fishmode     |
           p |  -.0251166   .0017317   -14.50   0.000    -.0285106   -.0217225
           q |    .357782   .1097733     3.26   0.001     .1426302    .5729337
-------------+----------------------------------------------------------------
beach        |
      income |   .0332917   .0503409     0.66   0.508    -.0653746     .131958
       _cons |  -1.694366   .2240506    -7.56   0.000    -2.133497   -1.255235
-------------+----------------------------------------------------------------
charter      |  (base alternative)
-------------+----------------------------------------------------------------
pier         |
      income |  -.0942854     .05006    -1.88   0.060    -.1924012    .0038303
       _cons |  -.9164063   .2072648    -4.42   0.000    -1.322638   -.5101748
-------------+----------------------------------------------------------------
private      |
      income |   .1227315   .0286306     4.29   0.000     .0666167    .1788464
       _cons |  -1.167087   .1590475    -7.34   0.000    -1.478814   -.8553596
------------------------------------------------------------------------------
```

XII

```
Pr(choice = charter|1 selected) = .46206853
------------------------------------------------------------------------------
variable     |   dp/dx   Std. Err.      z    P>|z|     [    95% C.I.   ]       X
-------------+----------------------------------------------------------------
p            |
       beach |  .000609   .000061     9.97   0.000    .000489   .000729    103.42
     charter | -.006243   .000441   -14.15   0.000   -.007108  -.005378    84.379
       pier |  .000764   .000071    10.69   0.000    .000624   .000904    103.42
     private |   .00487   .000452    10.77   0.000    .003983   .005756    55.257
-------------+----------------------------------------------------------------
q            |
       beach | -.008677     .0029   -2.99   0.003   -.01436  -.002994     .24101
     charter |  .088931   .027272     3.26   0.001    .035479   .142382    .62937
       pier | -.010886   .003596    -3.03   0.002   -.017934  -.003839    .16222
     private | -.069367   .021306    -3.26   0.001   -.111125  -.027609    .17121
-------------+----------------------------------------------------------------
casevars     |
      income | -.021734    .00666   -3.26   0.001   -.034787   -.00868    4.0993
------------------------------------------------------------------------------

Pr(choice = pier|1 selected) = .06584967
------------------------------------------------------------------------------
variable     |   dp/dx   Std. Err.      z    P>|z|     [    95% C.I.   ]       X
-------------+----------------------------------------------------------------
p            |
       beach |  .000087   .000016     5.42   0.000    .000055   .000118    103.42
     charter |  .000764   .000071    10.69   0.000    .000624   .000904    84.379
       pier | -.001545   .000138   -11.16   0.000   -.001816  -.001274    103.42
     private |  .000694   .000066    10.58   0.000    .000565   .000822    55.257
-------------+----------------------------------------------------------------
q            |
       beach | -.001237   .000481    -2.57   0.010   -.002179  -.000294    .24101
     charter | -.010886   .003596    -3.03   0.002   -.017934  -.003839    .62937
       pier |  .022008   .007293     3.02   0.003    .007715   .036302    .16222
     private | -.009886   .003283    -3.01   0.003   -.016321   -.00345    .17121
-------------+----------------------------------------------------------------
casevars     |
      income | -.009306   .002719    -3.42   0.001   -.014635  -.003977    4.0993
------------------------------------------------------------------------------
```

XIII

```
. * Conditional logit predicted probabilities
. predict pasclogit, pr

. summarize pasclogit

    Variable |       Obs        Mean    Std. Dev.       Min        Max
-------------+--------------------------------------------------------
   pasclogit |      4728         .25    .1946519   1.63e-10   .7772379

. tabulate $ylist

      =1 if |
     chosen |
alternative |      Freq.     Percent        Cum.
------------+-----------------------------------
          0 |      3,546       75.00       75.00
          1 |      1,182       25.00      100.00
------------+-----------------------------------
      Total |      4,728      100.00
```

XV

```
Mixed logit model                                 Number of obs   =       2190
                                                  LR chi2(1)      =      64.57
Log likelihood = -434.52844                       Prob > chi2     =     0.0000
```

d	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
Mean						
q	.7840088	.9147869	0.86	0.391	-1.008941	2.576958
dbeach	-.7742955	.224233	-3.45	0.001	-1.213784	-.3348069
dprivate	-.212556	.3059978	-0.69	0.487	-.8123006	.3871886
ybeach	.1199613	.0492249	2.44	0.015	.0234822	.2164404
yprivate	.1717711	.0716575	2.40	0.017	.0313251	.3122172
p	-.1069866	.0274475	-3.90	0.000	-.1607827	-.0531904
SD						
p	.0598364	.0191597	3.12	0.002	.022284	.0973888

XIV

```
. global ylist d

. global xlist q dbeach dprivate ybeach yprivate

. global rand p

.
. global id id

. global group id

.
. describe $id $ylist $xlist
```

variable name	storage type	display format	value label	variable label
id	float	%9.0g		person id number
d	float	%9.0g		=1 if chosen alternative
q	float	%9.0g		catch rate for available alternatives
dbeach	float	%9.0g		=1 if beach is chosen alternative
dprivate	float	%9.0g		=1 if private is chosen alternative
ybeach	float	%9.0g		=dbeach*income
yprivate	float	%9.0g		=dprivate*income

```
. summarize $id $ylist $xlist
```

Variable	Obs	Mean	Std. Dev.	Min	Max
id	2190	627.9329	344.3366	3	1182
d	2190	.3333333	.4715122	0	1
q	2190	.1885617	.1822591	.0002	.7369
dbeach	2190	.3333333	.4715122	0	1
dprivate	2190	.3333333	.4715122	0	1
ybeach	2190	1.41153	2.524873	0	12.5
yprivate	2190	1.41153	2.524873	0	12.5