

1.

```

. use accidents2
. probit crash tickets traffic i.male, nolog
Probit regression
Log likelihood = -60.522949
Number of obs = 948
LR chi2(3) = 720.22
Prob > chi2 = 0.0000
Pseudo R2 = 0.8561

```

crash	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
tickets	2.464657	.2768335	8.90	0.000	1.922073	3.00724
traffic	.159089	.0604682	2.63	0.009	.0405735	.2776045
1.male	5.892127	.7758214	7.59	0.000	4.371545	7.412709
_cons	-12.63666	1.529302	-8.26	0.000	-15.63403	-9.639279

Note: 516 failures and 13 successes completely determined.

```

. estimates store probit1

```

2.

```

. margins , dydx(tickets traffic) atmeans
Conditional marginal effects
Model VCE : OIM
Expression : Pr(crash), predict()
dy/dx w.r.t. : tickets traffic
at
   tickets = 1.436709 (mean)
   traffic = 5.201121 (mean)
   0.male  = .5327004 (mean)
   1.male  = .4672996 (mean)

```

	Delta-method					[95% Conf. Interval]	
	dy/dx	Std. Err.	z	P> z			
tickets	2.45e-07	8.06e-07	0.30	0.762	-1.34e-06	1.82e-06	
traffic	1.58e-08	5.14e-08	0.31	0.759	-8.49e-08	1.17e-07	

3.

```

. estat summarize
Estimation sample probit
Number of obs = 948

```

Variable	Mean	Std. Dev.	Min	Max
crash	.1624473	.3690553	0	1
tickets	1.436709	1.849456	0	7
traffic	5.201121	2.924058	.005189	9.99823
1.male	.4672996	.4991929	0	1

```

. matrix list r(stats)

```

```

r(stats)[4,4]

```

```

      mean      sd      min      max
crash .16244726 .36905531      0      1
tickets 1.4367089 1.8494562      0      7
traffic 5.2011207 2.9240582 .00518857 9.9982338
1.male .46729958 .49919289      0      1

```

```

. matrix r = r(stats)

```

```

. scalar f1 = normalden(_b[tickets]*r[2,1]+_b[traffic]*r[3,1]
>             +_b[1.male]*r[4,1] + _b[_cons])

```

```

///

```

```

. display f1*_b[tickets]

```

```

2.446e-07

```

```

. display f1*_b[traffic]

```

```

1.579e-08

```

4

. margins , dydx(male) atmeans

Conditional marginal effects

Number of obs = 948

Model VCE : OIM

Expression : Pr(crash), predict()

dy/dx w.r.t. : 1.male

at	tickets	=	1.436709	(mean)
	traffic	=	5.201121	(mean)
	0.male	=	.5327004	(mean)
	1.male	=	.4672996	(mean)

	Delta-method				
	dy/dx	Std. Err.	z	P> z	[95% Conf. Interval]
1.male	.0087485	.007247	1.21	0.227	-.0054553 .0229523

Note: dy/dx for factor levels is the discrete change from the base level.

5.

. estat summarize

Estimation sample probit

Number of obs = 948

Variable	Mean	Std. Dev.	Min	Max
crash	.1624473	.3690553	0	1
tickets	1.436709	1.849456	0	7
traffic	5.201121	2.924058	.005189	9.99823
1.male	.4672996	.4991929	0	1

. matrix list r(stats)

r(stats)[4,4]

	mean	sd	min	max
crash	.16244726	.36905531	0	1
tickets	1.4367089	1.8494562	0	7
traffic	5.2011207	2.9240582	.00518857	9.9982338
1.male	.46729958	.49919289	0	1

. matrix r = r(stats)

. local xb0 = \_b[tickets]\*r[2,1]+\_b[traffic]\*r[3,1] + \_b[\_cons]

. display normal(`xb0`+\_b[1.male]) - normal(`xb0`)

.00874852

6.

. margins , dydx(tickets traffic)

Average marginal effects

Number of obs = 948

Model VCE : OIM

Expression : Pr(crash), predict()

dy/dx w.r.t. : tickets traffic

	Delta-method				
	dy/dx	Std. Err.	z	P> z	[95% Conf. Interval]
tickets	.0857818	.0031049	27.63	0.000	.0796963 .0918672
traffic	.0055371	.0020469	2.71	0.007	.0015251 .009549

7.

```
. predict double xb, xb
. generate double me_tickets = normalden(xb)*_b[tickets]
. generate double me_traffic = normalden(xb)*_b[traffic]
. summarize me_tickets me_traffic if e(sample)
```

Variable	Obs	Mean	Std. Dev.	Min	Max
me_tickets	948	.0857818	.2090093	4.59e-35	.9818822
me_traffic	948	.0055371	.0134912	2.96e-36	.0633787

8.

```
. margins , dydx(male)
Average marginal effects          Number of obs =          948
Model VCE      : OIM
Expression     : Pr(crash), predict()
dy/dx w.r.t.   : 1.male
```

	Delta-method				
	dy/dx	Std. Err.	z	P> z	[95% Conf. Interval]
1.male	.2092058	.0105149	19.90	0.000	.188597 .2298145

Note: dy/dx for factor levels is the discrete change from the base level.

9.

```
. generate double xb0 = _b[tickets]*tickets + _b[traffic]*traffic + _b[_cons]
. generate double de = normal(xb0 + _b[1.male]) - normal(xb0)
. summarize de
```

Variable	Obs	Mean	Std. Dev.	Min	Max
de	948	.2092058	.3605846	7.79e-12	.996267