


```
. summarize
```

Variable	Obs	Mean	Std. Dev.	Min	Max
id	1615	808	466.3547	1	1615
age	1615	45.86068	8.588473	31	65
sbp21	1615	132.8	20.47891	80	230
sbp22	1615	130.2099	20.25402	75	270
sbp31	1615	131.2483	20.96145	88	260
sbp32	1615	128.7709	20.25998	85	270
smoke	1615	.7727554	.4191817	0	1
cholest2	1615	227.1858	42.25926	124	568
cholest3	1615	228.4043	41.45254	110	500
firstchd	1615	.079257	.2702231	0	1
SBP2	1615	131.505	19.67957	77.5	245
SBP3	1615	130.0096	19.89097	87.5	263
LSBP2	1615	4.374411	.2257176	3.314186	5.273
LSBP3	1615	4.354768	.2291443	3.624341	5.361292

```
. logistic firstchd age smoke cholest2
```

```
Logistic regression                               Number of obs =      1615
LR chi2(3) = 65.14
Prob > chi2 = 0.0000
Pseudo R2 = 0.0728
Log likelihood = -414.70698
```

firstchd	Odds Ratio	Std. Err.	z	P> z	[95% Conf. Interval]
age	1.07012	.0122548	5.92	0.000	1.046368 1.09441
smoke	1.759755	.439376	2.26	0.024	1.078758 2.870651
cholest2	1.010521	.0020127	5.25	0.000	1.006584 1.014474

```
. logistic firstchd age smoke cholest2 LSBP2
```

```
Logistic regression                               Number of obs =      1615
LR chi2(4) = 77.46
Prob > chi2 = 0.0000
Pseudo R2 = 0.0866
Log likelihood = -408.54381
```

firstchd	Odds Ratio	Std. Err.	z	P> z	[95% Conf. Interval]
age	1.059857	.0125358	4.92	0.000	1.03557 1.084714
smoke	1.85211	.4652346	2.45	0.014	1.132014 3.030271
cholest2	1.009949	.002029	4.93	0.000	1.00598 1.013934
LSBP2	4.196275	1.710943	3.52	0.000	1.887141 9.330901

```
. net install http://www.stata-journal.com/software/sj3-4/st0052, replace
checking st0052 consistency and verifying not already installed...
all files already exist and are up to date.
```

```
. cme firstchd age smoke cholest2 (sbp2true: LSBP2 LSBP3), fam(binom) eform com
> mands
```

```
----- begin do-file -----
* starting values
matrix startv = ( .0567, .6109, .009953, -15.3, -1.84, 1.656, .2425, .005913, -
> .02694, .0005605, 3.987)
gen _id = _n

* collapse data to make gllamm faster
gen _one = 1
collapse (sum) _wt2 = _one, by(firstchd LSBP2 LSBP3 _id age smoke cholest2 age
> smoke cholest2)

* give response variable and replicate measurements same prefix
rename firstchd _r1
rename LSBP2 _r2
rename LSBP3 _r3

* reshape data to long
reshape long _r, i(_id) j(_var)

* create dummy variables and interactions
gen byte cons = 1
gen byte _d1 = _var == 1
gen byte _dmeas = 1-_d1
gen _type = _d1 + 2*_dmeas /* response type */
gen _age_d1 = age*_d1
gen _smoke_d1 = smoke*_d1
gen _cholest2_d1 = cholest2*_d1

* define equations
eq load: _dmeas _d1
eq f1: age smoke cholest2 cons

* call gllamm
gllamm _r _cholest2_d1 _d1, /*
*/ i(_id) nocons eqs(load) link(logit ident) family(binom gauss) /*
*/ lv(_type) fv(_type) geqs(f1) from(startv) copy adapt /*
*/ weightf(_wt)

----- end do-file -----
```

```
. cme firstchd age smoke cholest2 (sbp2true: LSBP2 LSBP3), fam(binom) eform
```

```
Running adaptive quadrature
Iteration 0:    log likelihood = 285.01398
Iteration 1:    log likelihood = 511.63422
Iteration 2:    log likelihood = 531.67276
Iteration 3:    log likelihood = 532.10907
Iteration 4:    log likelihood = 532.10926
```

```
Adaptive quadrature has converged, running Newton-Raphson
```

```
Iteration 0:    log likelihood = 532.10926
Iteration 1:    log likelihood = 532.10932
Iteration 2:    log likelihood = 532.10941
Iteration 3:    log likelihood = 532.10941
```

```
gllamm covariate measurement error model          No. of obs          = 1615
```

log likelihood = 532.10941

OUTCOME MODEL

firstchd	exp(b)	Std. Err.	z	P> z	[95% Conf. Interval]	
firstchd						
age	1.056574	.0126891	4.58	0.000	1.031994	1.081739
smoke	1.860462	.469426	2.46	0.014	1.134615	3.050657
cholest2	1.00986	.0020414	4.85	0.000	1.005867	1.013869
sbp2true	7.12186	3.566547	3.92	0.000	2.668833	19.0049

TRUE COVARIATE MODEL

sbp2true	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
sbp2true						
age	.0059126	.0005966	9.91	0.000	.0047433	.007082
smoke	-.0269393	.0122037	-2.21	0.027	-.0508582	-.0030204
cholest2	.0005605	.0001208	4.64	0.000	.0003238	.0007972
_cons	3.986912	.0396652	100.51	0.000	3.909169	4.064654
res. var.	.0355005	.0014914			.0326376	.0384837

MEASUREMENT MODEL

error var.	.0127875	.00045			.0119353	.0137007
reliability	.735182	.0114345			.7122998	.7571009