

Research question: determinants of female labor force participation

Data: On 753 women in 1975 (Wooldridge teaching data set)

<i>INLF</i>	<i>=1 if in labor force (worked for wage at some point during this year)</i>	<i>.57</i>
<i>nwifeinc</i>	<i>Income of family in \$K not including wife's wage</i>	<i>20.1</i>
<i>Educ</i>	<i>Years of education</i>	<i>12.3</i>
<i>Exper</i>	<i>Experience</i>	<i>10.6</i>
<i>Age</i>	<i>Age</i>	<i>42.5</i>
<i>Kidslt6</i>	<i>Number of kids younger than 6 years old</i>	<i>.24</i>
<i>Kidsge6</i>	<i>Number of kids older than 6</i>	<i>1.35</i>

```
regress inlf nwifeinc educ exper expersq age kidslt6 kidsge6,r
```

Linear regression

```
Number of obs =      753
F(   7,   745) =    62.48
Prob > F       =    0.0000
R-squared      =    0.2642
Root MSE      =    .42713
```

inlf	Coef.	Robust Std. Err.	t	P> t	[95% Conf. Interval]	
-----+-----						
nwifeinc	-.0034052	.0015249	-2.23	0.026	-.0063988	-.0004115
educ	.0379953	.007266	5.23	0.000	.023731	.0522596
exper	.0394924	.00581	6.80	0.000	.0280864	.0508983
expersq	-.0005963	.00019	-3.14	0.002	-.0009693	-.0002233
age	-.0160908	.002399	-6.71	0.000	-.0208004	-.0113812
kidslt6	-.2618105	.0317832	-8.24	0.000	-.3242058	-.1994152
kidsge6	.0130122	.0135329	0.96	0.337	-.013555	.0395795
_cons	.5855192	.1522599	3.85	0.000	.2866098	.8844287

```
logit inlf nwifeinc educ exper expersq age kidslt6 kidsge6,r
```

```
Iteration 0:    log pseudolikelihood =  -514.8732
Iteration 1:    log pseudolikelihood = -402.38502
Iteration 2:    log pseudolikelihood = -401.76569
Iteration 3:    log pseudolikelihood = -401.76515
Iteration 4:    log pseudolikelihood = -401.76515
```

```
Logistic regression                                Number of obs    =          753
                                                    Wald chi2(7)     =          158.48
                                                    Prob > chi2      =          0.0000
Log pseudolikelihood = -401.76515                Pseudo R2       =          0.2197
```

inlf	Coef.	Robust Std. Err.	z	P> z	[95% Conf. Interval]	

nwifeinc	-.0213452	.0090782	-2.35	0.019	-.039138	-.0035523
educ	.2211704	.0444509	4.98	0.000	.1340482	.3082925
exper	.2058695	.0322914	6.38	0.000	.1425796	.2691594
expersq	-.0031541	.0010124	-3.12	0.002	-.0051384	-.0011698
age	-.0880244	.0144393	-6.10	0.000	-.1163248	-.0597239
kidslt6	-1.443354	.2031615	-7.10	0.000	-1.841543	-1.045165
kidsge6	.0601122	.0798825	0.75	0.452	-.0964546	.2166791
_cons	.4254524	.8597308	0.49	0.621	-1.259589	2.110494

```
predict y
(option pr assumed; Pr(inlf))
gen y_hat=(y>0.5)
gen sucess=(y_hat==inlf)
. sum sucess
```

Variable	Obs	Mean	Std. Dev.	Min	Max

sucess	753	.7357238	.4412401	0	1

What is the probability of being in a work force for a 40 years old women with 12 years of education and 6 years of experience if she has 1 kid older than 6 and family income is 20K?

```
dis      1/(1+exp(-(_b[_cons]+_b[nwifeinc]*20+_b[educ]*12+_b[exper]*6+_b[expersq]*36
+_b[age]*40+_b[kidslt6]*0+_b[kidsge6]*1)))
.57771495
```

```
margins, at (nwifeinc=20 educ=12 exper=6 expersq=36 age=40 kidslt6=0 kidsge6=1)
```

Adjusted predictions	Number of obs	=	753
Model VCE	: Robust		

Expression	: Pr(inlf), predict()	
at	: nwifeinc	= 20
	educ	= 12
	exper	= 6
	expersq	= 36
	age	= 40
	kidslt6	= 0
	kidsge6	= 1

	Delta-method					
	Margin	Std. Err.	z	P> z	[95% Conf. Interval]	
_cons	.5777149	.0308993	18.70	0.000	.5171534	.6382765

```
margins, dydx(_all)
```

Average marginal effects

Number of obs = 753

Model VCE : Robust

Expression : `Pr(inlf), predict()`

dy/dx w.r.t. : nwifeinc educ exper expersq age kidslt6 kidsge6

	Delta-method					
	dy/dx	Std. Err.	z	P> z	[95% Conf. Interval]	
nwifeinc	-.0038118	.0015923	-2.39	0.017	-.0069327	-.0006909
educ	.0394965	.0074931	5.27	0.000	.0248103	.0541827
exper	.0367641	.0052149	7.05	0.000	.0265431	.0469851
expersq	-.0005633	.0001767	-3.19	0.001	-.0009096	-.0002169
age	-.0157194	.0023861	-6.59	0.000	-.020396	-.0110427
kidslt6	-.2577537	.0323592	-7.97	0.000	-.3211766	-.1943307
kidsge6	.0107348	.0142388	0.75	0.451	-.0171727	.0386424

```
margins, dydx(_all) atmeans
```

Conditional marginal effects

Number of obs = 753

Model VCE : Robust

Expression : `Pr(inlf), predict()`

dy/dx w.r.t. : nwifeinc educ exper expersq age kidslt6 kidsge6

at	:	nwifeinc	=	20.12896	(mean)
		educ	=	12.28685	(mean)
		exper	=	10.63081	(mean)
		expersq	=	178.0385	(mean)
		age	=	42.53785	(mean)
		kidslt6	=	.2377158	(mean)
		kidsge6	=	1.353254	(mean)

	Delta-method					
	dy/dx	Std. Err.	z	P> z	[95% Conf. Interval]	
nwifeinc	-.0051901	.0022108	-2.35	0.019	-.0095231	-.000857
educ	.0537773	.0108571	4.95	0.000	.0324977	.0750569
exper	.0500569	.0078845	6.35	0.000	.0346036	.0655103
expersq	-.0007669	.0002468	-3.11	0.002	-.0012506	-.0002833
age	-.021403	.0035277	-6.07	0.000	-.0283173	-.0144888
kidslt6	-.3509498	.0498826	-7.04	0.000	-.4487179	-.2531817
kidsge6	.0146162	.0194105	0.75	0.451	-.0234277	.0526601

LPM, Logit and Probit estimates of Labor Force participation

Dependent variable: labor force participation

Regressor	LPM (OLS)	Logit (MLE)	Average marginal effects, logit	Probit (MLE)	Average marginal effects, probit
Family income other than wife's wage	-0.00341* (0.0015)	-0.021* (0.009)	-0.00331* (0.0015)	-0.012* (0.005)	-0.00361* (0.0016)
Education	0.038** (0.007)	0.22** (0.04)	0.039** (0.007)	0.13** (0.03)	0.039** (0.007)
Experience	0.039** (0.006)	0.21** (0.032)	0.037** (0.005)	0.12** (0.02)	0.037** (0.005)
Experience^2	-0.0006** (0.0002)	-0.003** (0.001)	-0.00056** (0.0002)	-0.002** (0.0006)	-0.00057** (0.0002)
Age	-0.016** (0.002)	-0.09** (0.014)	-0.016** (0.002)	-0.05** (0.008)	-0.016** (0.002)
Kids under 6	-0.26** (0.03)	-1.44** (0.2)	-0.26** (0.03)	-0.87** (0.12)	-0.26** (0.03)
Kids over 6	0.013 (0.013)	0.06 (0.08)	0.011 (0.014)	0.036 (0.045)	0.011 (0.013)
Summary statistics					
<i>Pseudo R^2</i>	0.26	0.22		0.22	
Fraction correctly predicted	0.734	0.736		0.734	
<i>n</i>	526	526		526	
<i>Difference in predicted participation one kid vs no kids under 6 (at average)</i>	-26%	-27%		-27%	