

Labor market participation: Binary dependent variable

Source: MROZ.RAW in Wooldridge. T.A. Mroz (1987), “The Sensitivity of an Empirical Model of Married Women’s Hours of Work to Economic and Statistical Assumptions,” *Econometrica* 55, 765-799.

```

Obs:      753
inlf      byte      %9.0g      =1 if in lab frce, 1975
age       byte      %9.0g      woman's age in yrs
educ      byte      %9.0g      years of schooling
kidslt6   byte      %9.0g      # kids < 6 years
kidsge6   byte      %9.0g      # kids 6-18
nwifeinc  float     %9.0g      (faminc - wage*hours)/1000
hushrs    int       %9.0g      hours worked by husband, 1975
husage    byte      %9.0g      husband's age
huseduc   byte      %9.0g      husband's years of schooling
huswage   float     %9.0g      husband's hourly wage, 1975
city      byte      %9.0g      =1 if live in SMSA
    
```

```
. use http://fmwww.bc.edu/ec-p/data/wooldridge/MROZ
```

```
. sum inlf age educ kidslt6 kidsge6 nwifeinc hushrs husage huseduc huswage unem city ,
sep(0)
```

Variable	Obs	Mean	Std. Dev.	Min	Max
inlf	753	.5683931	.4956295	0	1
age	753	42.53785	8.072574	30	60
educ	753	12.28685	2.280246	5	17
kidslt6	753	.2377158	.523959	0	3
kidsge6	753	1.353254	1.319874	0	8
nwifeinc	753	20.12896	11.6348	-.0290575	96
hushrs	753	2267.271	595.5666	175	5010
husage	753	45.12085	8.058793	30	60
huseduc	753	12.49137	3.020804	3	17
huswage	753	7.482179	4.230559	.4121	40.509
city	753	.6427623	.4795042	0	1

1. Linear Probability Model

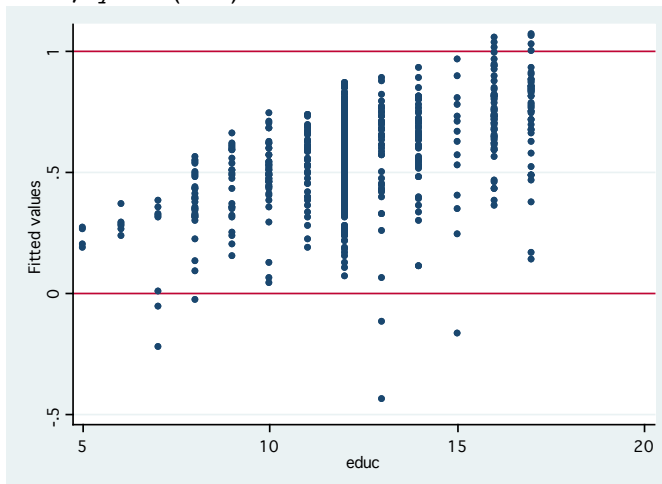
```
. reg inlf nwifeinc educ age kidslt6 kidsge6, robust
```

```

Linear regression                               Number of obs =      753
                                                F(   5,   747) =    33.96
                                                Prob > F       =    0.0000
                                                R-squared      =    0.1466
                                                Root MSE      =    .4594
    
```

	Coef.	Robust Std. Err.	t	P> t	[95% Conf. Interval]	
inlf						
nwifeinc	-.0068444	.0015309	-4.47	0.000	-.0098498	-.003839
educ	.052459	.0072904	7.20	0.000	.0381469	.0667712
age	-.0116789	.0024414	-4.78	0.000	-.0164716	-.0068861
kidslt6	-.2968039	.0329886	-9.00	0.000	-.3615653	-.2320426
kidsge6	-.011692	.0143619	-0.81	0.416	-.0398866	.0165025
_cons	.6447792	.1555271	4.15	0.000	.339457	.9501014

```
. predict olshat
(option xb assumed; fitted values)
. twoway scatter olshat educ, yline(0 1)
```



Predicted values for the probability to be in the labor force

2. Logit Model

$$P(y = 1|x_1, \dots, x_k) = G(\beta_0 + \beta_1x_1 + \dots + \beta_kx_k)$$

$$= \frac{e^{\beta_0 + \beta_1x_1 + \dots + \beta_kx_k}}{1 + e^{\beta_0 + \beta_1x_1 + \dots + \beta_kx_k}}$$

```
. logit inlf nwifeinc educ age kidslt6 kidsge6 city
```

```
Iteration 0: log likelihood = -514.8732
Iteration 1: log likelihood = -455.83688
Iteration 2: log likelihood = -454.18791
Iteration 3: log likelihood = -454.17931
Iteration 4: log likelihood = -454.17931
```

```
Logistic regression                               Number of obs   =           753
                                                    LR chi2(6)      =          121.39
                                                    Prob > chi2     =           0.0000
Log likelihood = -454.17931                       Pseudo R2       =           0.1179
```

inlf	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]
nwifeinc	-.0350754	.0080669	-4.35	0.000	-.0508862 -.0192646
educ	.2575602	.0409102	6.30	0.000	.1773777 .3377427
age	-.0576886	.0128004	-4.51	0.000	-.0827769 -.0326003
kidslt6	-1.484777	.1980748	-7.50	0.000	-1.872996 -1.096558
kidsge6	-.0666249	.0679011	-0.98	0.326	-.1997087 .0664589
city	.0191028	.17473	0.11	0.913	-.3233617 .3615672
_cons	.7254404	.7890909	0.92	0.358	-.8211493 2.27203

. More on the logit model on next handout